INDUSTRIAL MEDICINE AND SURGERY

INDUSTRIAL MEDICINE

The International Journal of Medicine in Industry

This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

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INDUSTRIAL MEDICINE AND SURGERY, The Journal of Medicine in Industry (with which are consolidated "The Industrial 'Doctor'" and "International Journal of Medicine and Surgery"): Entered as second class matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Reentered, October 3, 1949. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Chicago. STEPHEN G. HALOS, Chairman; STEPHEN F. HALOS, President; HAROLD A. HOOPER, Treasurer; CAREY P. MCCORD, M.D., Editor; DORIS L. FLOURNOY, Managing Editor; A. D. CLOUD, Editorial Consultant; LUCILLE H. GROSS, Circulation Manager. Member, Audit Bureau of Circulations. PUBLICATION, EDITORIAL AND EXECUTIVE OFFICES, 605 North Michigan Avenue, Chicago 11, Illinois. Miami Office, 5301 S. W. 76th Street, Miami, Florida. Subscription $6.00 per year in the United States; $8.00 (U.S. Currency) per year in Canada; $12.00 (U.S. Currency) per year in other countries. Single copies 75 cents. Title Registered in United States Patent Office. Registered Canada, 1942.

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INDUSTRIAL MEDICINE AND SURGERY

JUNE, 1958

Religious Activities in Industry

Occupational Health Asset?

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NEARLY *everybody has notions about the proper role of the church in economic affairs. Businessmen and labor leaders, laymen and ministers disagree emphatically, and frequently accuse each other of apostasy. On the one hand, the church is admonished to confine its attention to the spiritual needs of its parishioners lest its inclusive fellowship be broken or its gospel compromised. On the other hand, ministers are summoned to fearless proclamation of the Kingdom of God in social terms, with less retreat into surplices and cloisters and more attention to practices of factory and market place. The church is blamed for its indifference and praised for minding its own business, commended as an agent of social salvation and denounced as a haven for meddlers, acclaimed as a guarantor of social stability and cursed as an insidious peddler of dope. Despite the controversy, which is of long standing, very little study of the actual role of the church in economic society has been undertaken.**

—Liston Pope and Gilbert L. Starke

ARRIVING daily in California are thousands of persons seeking new work opportunities in the burgeoning industries of the West. In this drive for individual growth, these people are leaving, as they perceive them, areas of cultural, industrial, or educational aridity, or situations with which they are in conflict.

Not dissimilar was the westward trek made 150 years ago by our migrant forefathers who, discontent with the protagonists for a state church, left for the frontier where denominational dissenters could feel free to worship in a manner that was to be guaranteed them by the First Amendment to the Constitution. To meet the religious needs of the frontiersman — whose life and work were inseparable activities — "home missionaries" were sent to these danger and hardship areas. From these initial placements of religion at the work site, grew the circuit riding, the camp meetings, and the multiple ordinations that were to provide a spiritual value to the stresses of labor.

In the century and a half to follow, national strains appeared, many Presidents completed their terms of office, wars and panics and prosperous periods came to America. Adjunctively, the scientist and the engineer have attained new status, and into this era of bigness in industry, lushness of living, and schemes for outer space invasion has come a "resurgence in religion."[1] The stadium-filling evangelists, the easy-to-carry books on the etiquette of thinking and the ways and means toward peace, the digest-

**From the preface to *Millhands and Preachers*, A Study of Gastonia. New Haven, Yale University Press, 1942.

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size inspirational monthlies placed in your hotel room with the compliments of the management,* the $3,000,000,000 church building boom since 1950,[2] the 97½ million church membership in America,[3] the 95% of Americans who "read the Bible at some time or another,"[4] and the syndicated series in our newspapers by the "Clergy Churchman of the Year,"[5] bespeak this active interest. Even though "organized religion represents a relatively small share of the economic life of the nation, total contributions to churches constitute as much as one half of all the philanthropic giving by our people."[6] Television presentations on religion are scaled for the church school kindergarten-absentee to the adult voluntary or involuntary shut-in. The traveler to the Grand Canyon of Arizona will, one day soon, have the Shrine of the Ages Chapel (financed by private contributions which are "deductible for income tax purposes") to meet his needs while vacationing in that national park,[7] and a filling station operator on U.S. Highway 77 in Wynnewood, Oklahoma, has turned an unused room into a prayer sanctuary which finds use by many of his customers.† Allegedly this has decreased the number of accidents on 77 in Garvin County and the owner "has found it not only good business, but a source of great satisfaction to know that many travelers take advantage of the opportunity he offers them to enter his little chapel."[8] Football games of national significance in some areas are opened by an electronically amplified prayer, and a cafeteria in Washington, D.C., has a sign on its serving line which reads "Religion and patriotism help make this a fine place to work," and brief "Thanksgiving Before Meals" prayers are provided for Catholic, Jewish, or Protestant faiths on cards placed at all tables.

"Dial-a-Prayer," a 30-second message heard when a certain telephone number is dialed — dubbed by *Time* as "recorded solace," and "the newest contribution of science to salvation"[9] — is available in most large cities, and in Los Angeles, the Dial-for-Inspiration of the Y.M.C.A. handles 10,000 calls each day. Part-time preachers abound in considerable number throughout the Southeast and Southwest, and employees of large companies who work regularly for five days, serve churches at week's end.[10] The only spot of architectural beauty in the Antarctic bases for the International Geophysical Year is the little church with its white picket fence — "an outpost of faith in an area almost twice as large as the United States."[10a]

*"*Guideposts,*" says Conrad N. Hilton, "is a 'must' in an increasing number of homes today and we have subscribed for many of our employees . . . Its true life stories bring refreshment at the end of a busy day. They may start the day with new inspiration. All of us at the Hilton Hotels hope that *Guideposts* will give you the same pleasure it gives us, and that it will help to make your stay with us memorable."

†A tall sign outside the station reads:

Ice Water
Truck Stop
Cash Discount
Visit our Prayer Sanctuary
You are Welcome

Significance of Current Religiosity

SERIOUS writers in both the lay press and their own church journals have attempted to fit these contemporary goings-on in religion's name into the pattern of our time. The Dean of the Cathedral of St. John the Divine in New York[11] has expressed misgivings over this religious boom, and has observed that the results are not commensurate with the growth and activism of the enterprise. He points up the lack of surcease in the divorce, juvenile delinquency, mental illness, addiction, and corruption rate-climbs. Secondly, the effect on the clergy has been one of overwhelming demands of time, judgment, and skills so that for them there has been "little time for development of inner peace and the nourishment of personal integration." Rosenberg[12] at Yale has attempted to identify the social sources for this revival. Many have viewed the reasons as "the anxiety, the uncertainty, the depression, and the collapse of social morale that seem characteristic of our time," but to him the sources lie in (a) the need for conformity in our threatened society, (b) the exploitation by the mind-shaping hucksters of the need for peace and security, (c) the need for community in an era of social disruption, and (d) the need for understanding and remedy of the cultural discrepancy between ethics and practice. In essence, he decries the Godly sanction given to the cult of success, the "tortured pursuit of 'happiness'," and social attractiveness as derived from doctrine reformulated by the popular religionists. Significant is the fact that the revival has seen little of the theologians and so much of the big-time operators.

Rev. Richard Henry[13] looks on this upswing in piety as an expression of the "profound and pervasive hunger in men's souls for a strong and unifying religious faith — a sacred common ground, upon which men of varying conviction or of none can meet as one. If it has marks of a somewhat frenzied search for the unattainable, for strong convictions about ultimately unknowable things, that. . . is because our way of thinking about religion has been confused by men who have persuaded us that religion is concerned primarily with belief rather than with conduct, with metaphysical abstractions rather than with the character of the good life."

These feelings are offered by the clergy regarding trends in their own area of inquiry, and seem to establish three camps — the sincere religionist seeking the re-establishment of the moral and ethical principles of behavior, the mass communications man of religious com-

merce, and the thoughtful but perplexed cleric, who finds himself asunder in trying to match today's codes to basic spiritual doctrine. Onto this confusing base will be placed a strong and equally unexplained movement — the exercise of religious activities at the work scene in industry.

Historical Evidence

THAT an interdigitation of work and worship is not new is given testimony in several situations. America's first successfully operated iron works in Saugus, Massachusetts, and where the die for the Pine Tree schilling was cast, had as one of its short-lived charter requirements that religious instruction be given all its workers. In the First Factory Act of Great Britain, dated June 22, 1802,[14] and entitled, "An Act for the presentation of the health and morals of apprentices and others, employed in cotton and mills, and cotton and other factories," it read: "And be it further enacted, that the Justices of the peace for every county . . . in which any such mill or factory shall be situated, shall . . . appoint two persons, not interested in, or in any way connected with, any such mills or factories, to be visitors . . . one of whom shall be a justice of the peace for such county . . . and the other shall be a clergyman of the established Church of England or Scotland . . . and the said visitors . . . shall have full power and authority from time to time throughout the year, to enter into and inspect such mill or factory, at any time of the day, or during the hours of employment . . . and . . . shall report from time to time in writing . . . the state and condition of such mills and factories, and of the apprentices therein . . . "

Although this concerned an inspective function only, it did bring a clergyman into the plant premises. About the only environmental health requirements of the day were a restriction of the number of hours of work for apprentices and mandatory whitewashing of the factory walls at specified intervals.

In Philadelphia, in 1833, at the Kensington Glass Works, Thomas Dyott, the founder, was the first glass manufacturer to keep his men employed for a full 12 months. However, they worked 11 hours a day, and closed each day with singing and a prayer.[15]

Although the use of chaplains in European armies is an old custom, the first chaplain of the United States Army was the Reverend John Hurt (Episcopalian) appointed in 1791, serving during the Revolution, although a chaplain had been appointed to the Continental Army in 1776. The Continental Navy had a chaplain appointed in 1788, and in 1799 President Adams commissioned the first chaplain in the United States Navy. This type of ministerial appointment is one which provides religious leadership at work, in contradistinction to chaplains designated for duty in civil hospitals or in hospitals of the Veterans Administration, whose functions relate to patients, and in no way to the employees of the institution. Comparably, the chaplains serving prisons have congregations considerably different from wage-earning work groups.

For the utilization of ministers in industry on full-time or part-time bases, or as counsellors, one must explore its developments in the early years of World War II.

Programs in Industry

SHOWN in Table I.* are 10 organizations which have had, or currently have, one type or another of activity relating religion to the worksite. The total of 100 companies reviewed ranged in size from some of America's industrial mammoths to those with only a few employees, and coursed from large manufacturing plants to small personal service organizations. Some had full- or part-time chaplains, others carried on their endeavors under either managerial or employee leadership. Table II is a complete summary of the general types of religious activities of the 100 industrial organizations.

Devotional services are held in a great number of work situations, and these may be conducted weekly, daily, or thrice weekly. Infrequently, there will be special Lenten services. Several organizations have provided chapels,† prayer rooms, or meditation rooms for employees' use, some reserved specifically for meditation, others created for the special purpose of holding services. Religious publications (tracts, popular digest-size monthlies, or Bibles) are distributed to some employee groups or, in other areas, are made available in literature racks. Infrequently special Clergy Days are held as part of a company's effort to orient local ministerial associa-

*A comparable detailed table of 100 such programs is available in mimeographed form from the author.

†The Goodwill Industries of America, in its Chapel Manual provides the best basis for conducting chapel services that has been encountered in print. Employing physically handicapped persons in sheltered work, the need for spiritual support is strong — perhaps stronger than in competitive industry. These chapel services will "do the following: (1) Correct the clients' self picture — Aid them to see themselves as they really are — needs, weaknesses, and all; (2) Convince them that they are not alone, that everyone else has problems; (3) Give them a sense of the capabilities that they have but aren't using; (4) Give them the deepening awareness and concern over the needs of other people; (5) Help them become increasingly reflective human beings; (6) Aid them to set up challenging attainable personal goals; (7) Encounter their 'growing in grace,' that ancient religious idea which means, in general, patience, forebearance, faith, the ability to lead a godly life without strain; (8) Help them enlarge their ability to appreciate the beauty which God has placed around them; (9) Help them acquire the capacity for ethical judgment in the light of consequences; (10) Help them cultivate an increasingly spiritual attitude toward the world; (11) Make them unafraid to criticize and evaluate their own scale of values; (12) Aid their growing in youthfulness of outlook, in health, in knowledge, in attitude, and in every dimension; (13) Make them increasingly purposive, able to stick to a course of right action. In short, the chapel can help our people become, in their own right, good, happy, mature, useful individuals."

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TABLE 1.

RELIGIOUS ACTIVITIES IN INDUSTRIAL ORGANIZATIONS — EXAMPLES OF 10 PROGRAMS

Company	Type of Industry	Location	Religious Activities	Functions of Chaplain	Sponsor	Remarks
Arma Corporation	Production of precision equipment.	Brooklyn, New York	*No current activities.* Activities carried out during World War II: Two full-time chaplains Gospel services: 3 lunch-time services led by employees — 12:30 p.m., 1:05 p.m. and 11:00 p.m. Monday: Shop "group leader" spoke Tuesday: Chaplain had "skip study" Wednesday: Guest speaker Thursday: Experience service Friday: Employee spoke Saturday: Hymn sing Sunday: 10 minute recording of prayer, hymn, and gospel message by chaplain played over P.A. system at all lunch hours.	Functions during World War II: Led devotional services. Personal counseling. Marital counseling. Supervised publication of monthly devotional bulletin. Prepared page for house organ. Supervised lending library of gospel books and 80 tract boxes. Completed outside speaking engagements.	Management	Chaplain was Baptist. Impression was that program was tried on "cost-plus" basis of wartime contracts.
William H. Barnhardt	President of textile enterprises and Barnhardt Foundation, Inc.	Charlotte, North Carolina	Distribution of printed religious materials.	No chaplain.	Management	Thus far have been distributed 50,000 pictures of head of Christ with message on reverse by James A. Francis, D.D. and 10,000 copies of "Daily Light on the Daily Path." These have gone to mills, schools, seminaries, YMCA's, ministers. Pictures average 8,000 yearly, and books about 600 per year.
Caterpillar Tractor Compay	Manufacturing of farm, earth-moving and related equipment.	Peoria, Illinois	Clergy Day held at plant in 1950.	No chaplain.	Management	Letters of invitation sent to 225 ministers in 2000 square miles where Caterpillar Tractor Company employees lived. 98 visited, arriving for 11:00 a.m. plant trip, followed by lunch with executive group. Subsequently adjourned to theater to hear talks on importance of people in the organization, the company's community responsibility, human relations program, modern plant facilities, efficiency, and morale. A discussion followed, and session closed at 4:00 p.m. Believed highly successful in establishing mutual understanding.
Copper Alloy Corporation	Manufacturing of stainless steel castings, aircraft rings, valves, and pipe fittings.	Hillside, New Jersey	Monthly prayer meetings. Part-time chaplain.	Leads prayer meetings. Visits and counsels men during two hours prior to meeting when "he has the free run of the shop." Conducts home visitation.	Management, which provides minister's lunch, time, area, furniture, and good will.	Program inaugurated in 1948. Meetings held in a central work area, and attendance has increased each year. Meeting of 30 minutes is held during 15 minutes of lunch period and 15 minutes of company time following. Although minister is Presbyterian (and a former foundryman), many Catholics and Jews attend. ½ Company time.
Dallas Tank Company, Inc.	Manufacturing of refinery equipment, truck tanks, hoppers, bulk and station tanks, smoke stacks, etc.	Dallas, Texas	Monthly devotional service. Distribution of Bibles to employees.	No chaplain.	Management	Once monthly, a 30 minute religious service is held immediately following lunch period. Speaker is a former employee, now an ordained minister, Baptist. Inaugurated about eight years ago. Company time.

TABLE I.—CONTINUED

Company	Type of Industry	Location	Religious Activities	Functions of Chaplain	Sponsor	Remarks
Eastern Air Lines	Commercial air lines	Miami, Florida	Sending *Guideposts* to home addresses of employees. Occasionally other "pamphlets that touch on the religious angle" are included with mailings to the homes.	No chaplain.	Management	Program initiated circa 1950.
Fieldcrest Mills, Inc.	Textile mills	Spray, North Carolina	Full-time chaplain.	Counsels retirees. Counseling on personal problems. Visits to hospitals or homes in event of illness or death. Conducts services in community in absence of regular minister. Participation in community activities. Meets with employee groups. Assists in funeral services. Escorts visitors through mill	Management	Inaugurated January 1, 1950. Approximately 6000 employee contacts of services annually. Counseling requests are voluntary and interviews are confidential. Well accepted by employees and community. Chaplain is Southern Baptist.
Gold & Company	Department Store	Lincoln, Nebraska	Daily silent prayer at store's opening.	No chaplain.	Management	For over 30 years at 8:59 a.m., a gong is sounded for a minute of silent prayer, just before doors are opened to customers. Began with the Angelus, customary during World War I, when a "Moment of Silence" was respected at 11:00 a.m. daily. After the war, this was moved to the opening period. Store has 1000 employees. Company time.
Great National Life Insurance Company	Insurance	Dallas, Texas	Weekly religious services.	No chaplain.	Employees and management	Services held each Wednesday, 8:30-8:45 a.m. Speakers selected by committee of three employees, committee changing every three months. Attendance has been 75% of total employment. Company time.
Independent Packing House Workers Union; Swift & Company	Trade union; meat products	Kansas City, Missouri	Part-time chaplain	Counseling of employees. Opens membership and Board meeting (union) with prayer and brief message. Sick visitation at home or in the hospital. Ministry at death of employee; frequently conducts funeral services.	Trade union with co-operation of management	Chaplain is an employee of the company, but is chaplain for the union, who may leave his job to serve an employee on or off plant. Time is paid by union at job rate. Chaplain is Baptist.

tions in the mission of the plant and its personnel relations program.

Where chaplains have been added to the firm's staff, they have engaged in personal counseling, sick visitation (home or hospital), plant visitation, ministry at the time of the death of an employee, preaching on occasion in the community, and during World War II, they served in connection with absenteeism control as part of the industrial relations program. In one company, a special department was created to extend certain counseling functions beyond the organization into areas of prison ministry, employment of the aged or handicapped worker, or personal budgeting problems. Most of the chaplains have been of a protestant faith, and their activities are strongest in certain areas of the so-called Bible Belt.

In Table III, the types of industry or kinds of establishments are shown, wherein religious activities are encountered. The plants manufacturing heavy equipment are greatest in number, although the specific activities are not at all consistent within the group — one manufacturer introduces a considerable program of religion in his plants and has a special institute for the training of evangelical ministers, while another company furnishes copies of *Guideposts* to its employees. No great significance is attached to the distribution seen among the other industrial

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TABLE II.
SUMMARY OF RELIGIOUS ACTIVITIES IN 100 INDUSTRIAL AND BUSINESS ORGANIZATIONS BY TYPE*

Type of Activity	Number
Devotional services	71
Part-time chaplain	18
Personal counseling by chaplain	14
Full-time chaplain	13
Establishment of chapel	12
Distribution of Bibles to employees or customers	6
Distribution of other religious publications	6
Broadcast of devotional services in plant	4
Clergy Day	3
Foundations established for religious activities	2
Ministerial personnel used for absenteeism control	2
Publication of church directory	1
Showing of religious films	1
Special department established for religious activities	1
Organizations whose activities were during World War II only	5
Organizations whose activities have been discontinued, other reasons	8

*The total number exceeds 100, for several of the organizations listed carried out multiple activities.

TABLE III.
DISTRIBUTION BY TYPE OF INDUSTRY OF ORGANIZATIONS CONDUCTING RELIGIOUS ACTIVITIES

Type of Industry	Number
Machinery, automobile & heavy equipment manufacturing	16
Small parts, tools, hardware manufacturing	9
Transportation (air, rail, motor, cab)	7
Governmental body or agency (international, federal, state, municipal)	6
Foodstuff preparation or serving	5
Petroleum products	5
Cleaning, laundry	4
Steel manufacturing	4
Clothing and footwear manufacturing	3
Communications (radio, newspaper, telephone)	3
Construction	3
Supply companies	3
Banking	2
Farm products	2
Hospitals	2
Insurance underwriting	2
Lumber products	2
Printing	2
Retail sales	2
Textile manufacturing	2
Advertising	1
Decal manufacturing	1
Fire arms	1
Football team (professional)	1
Hotel	1
Mining	1
Public utility (gas)	1
Pulp and paper manufacturing	1
Scrap paper company	1
Sheltered workshop	1
Social agency	1
Tobacco products	1
Undetermined	4
Total	100

groupings, for it is not felt that the presence or absence of this activity is determined by the type of product or service offered the public.

Geographically, 47% of the organizations are to be found in Texas and Oklahoma. In the larger state, active leadership was given the movement by a full-time chaplain, who helped create the Dallas Council of Religion in Business, which functioned successfully for several years. Oklahoma shares the religious fervor demonstrated by a great number of the protestant sects in Texas, and this might explain the greater utilization of part-time chaplains and the frequent holding of devotional services. It should be mentioned that unquestionably other efforts have appeared in various states, but if they have been omitted, it is only because an intensive perusal of the secular (and some clerical) literature, and a wide inquiring correspondence failed to reveal any, other than those listed. As an example, it is believed that several companies in industrial New Jersey are sharing visits of a part-time chaplain, but the specific organizations could not be identified.

On occasion, leaders in the labor movement either have shied away from supporting these kinds of activities or have criticized management for introducing them. The latter feeling probably stems from certain political teachings which have implied that religion is introduced

TABLE IV.
DISTRIBUTION BY LOCATION OF ORGANIZATIONS CONDUCTING RELIGIOUS ACTIVITIES

Location	Number
Texas	35
Oklahoma	12
New York	7
California	4
Canada	4
New Jersey	4
Pennsylvania	4
Florida	3
Michigan	3
North Carolina	3
Georgia	2
Illinois	2
Indiana	2
Tennessee	2
Arizona	1
Arkansas	1
Connecticut	1
District of Columbia	1
Kansas	1
Louisiana	1
Maryland	1
Massachusetts	1
Nebraska	1
Rhode Island	1
Washington	1
Wisconsin	1
Throughout U.S.*	1
Total	100

*Goodwill Industries

TABLE V.
RELIGIOUS ACTIVITIES DISTRIBUTED BY SPONSORING GROUP*

Sponsor	Number
Management	62
Employees	19
Joint: management and employees	8
Equipment, space, or materials furnished by management for employee-sponsored activities	6
Outside agency	5
Union	3
Unknown	1

*In a few organizations, overlapping of sponsorship a joint support was encountered, so that the total exceeds 100.

TABLE VI.
DEVOTIONAL SERVICES HELD ON COMPANY TIME

Total number conducting devotional services		71
Number held on company time	24	
Number held on ½ company time, ½ employee's time	1	
Number presumably held on employee's time	46	

TABLE VII.
LAY RELIGIOUS GROUPS ACTIVE IN BUSINESS AND INDUSTRY*

Organization	Business or Type of Industry Represented	Objectives	Religious Activities	Achievements	Approximate Membership	Remarks
Laymen's Movement for a Christian World	Department store heads, hotel chain owner, corporation heads, clerks, salesmen, garage mechanics, carpenters, and union leaders.	To work as spiritual leavening agents in society. To carry out their belief that there is a pattern of workability in the laws of God for human conduct.	Annual national conference. Weekly meetings in some communities for prayer and consultation. Informal prayer meetings in clubs, offices, or hotel chapel. Development of small spiritual groups. Labor-management relations. Spiritual support for world concerns and world leaders. Operation of a spiritual research and training center at Rye, New York. Training in counseling. Publication of books and pamphlets.	Settling of serious labor disputes. Changing working atmosphere in industrial plants. Relieving racial tensions. Responsible for inauguration of Laymen's Sunday. Largely responsible for Meditation Room in U.N. Suggested use of minute of reverent silence in opening of World Series. Injected spiritual values into some areas of education and community life. Opening of labor-management negotiations with prayer.	Over 1500 Protestants, with some Catholics and Jews. Different racial representation.	Organized in 1941 by Wallace C. Speers, Vice-President of James McCutchean & Company, of New York. Group headquarters in New York.
Fishermen's Clubs†	Businessmen comprise the membership.	To invite people to declare their faith.	Canvass the community, regularly ringing doorbells.	Not known.	Not known. One Club numbered 70 members.	Several Clubs which have sprung up in the Protestant Churches of Des Moines, Iowa.
†Name derived from members' literal acceptance of the words of Jesus, "I will make you to be fishers of men."						
Businessmen for Religious Action (of Nashville and Davidson County)	Businessmen representing various business interests — radio station officials, heads of wholesale and retail firms, service shop owners.	To increase attendance at church services. To interest as many people as feasible in doing personal work [in religion]. Slogan: "Worship God More in '54."	"Selling of Christianity" through: Speeches to civic clubs, Film strips, Window posters, Pamphlets, Car tags, Printed inserts for public utility bills (The last was a pamphlet by Dr. George W. Crane, "Why You Should Go to Church." In one distribution alone 105,000 copies were sent). Tape recordings for radio broadcast.	Not known.	About 100, from many faiths.	Idea originated with Houston Ezell, a young contractor in Nashville, and was put into action by O. Jennings Davis, secretary of a Nashville insurance company. First activity in December 1953.
Christ Bearers—Pittsburgh, Pennsylvania	Founded by group of industrialists (presidents, vice-presidents, and other executives from the country's largest steel plants, engineering firms, department stores, etc.	"To put Christianity to work," (to apply religion to business matters; To have businessmen talk about their faith in public, ("to speak out for God.")	Study groups established in Pittsburgh. Sunday school classes started for adults.	Not known.	Not known.	Aided by Episcopalian minister who, for example, conducted a seven-week series of lectures on "How to become a Christian." This series was held at the Pittsburgh Golf Club.
Fellowship of Christian Athletes	Membership comprised of players from professional baseball and football teams.	By utilizing the positive values of hero worship, hope to combat juvenile delinquency. Encourage teenage groups to attend church.	Sponsor series of rallies for high school and college audiences, with theme of "Go to the church of your choice." Motion picture has been made and is being shown in schools and on television as part of the campaign.	Unknown.	Number unknown, but includes George Kell (Baltimore Orioles), Vernon Law (Pittsburgh Pirates), Robin Roberts (Phillies), Carl Erskine (Dodgers), Dan Towler (Los Angeles Rams), Adrian Burk (Philadelphia Eagles), Doak Walker, Charles Dowell, Bob Richards, and Roger Bourland.	Audiences have varied in size from 30 to 2000. Expenses were underwritten by Pittsburgh businessmen, and group is headed by a full-time basketball coach. Services have been volunteered by such persons as Bob Mathias, Bud Wilkinson, Alvin Dark, Pepper Martin, and Tom Harmon.

*References may be obtained from author.

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only "to exploit the workers." That this argument lacks substance is given confirmation by the figures in Table V, where it is shown that three unions themselves have sponsored this activity, and 27 of the programs have had either sole support by groups of employees or joint backing of workers plus managerial persons.

In 24 of the organizations holding devotional services (Table VI), these meetings are believed of such value as to warrant their being held on company time. One company shares the time with the employees, so that one-half of the time consumed by the service is taken from the worker's lunch hour, and the other half is contributed by the industry.

Lay Organizations

A FACET of this total endeavor is the creation of lay groups among businessmen whose objectives include, as seen in Table VII, the heightening of religious feeling in our industrial society. Executives of some of this country's greatest corporations have been active in demonstrating that businessmen can accept spiritual values and weave them into the fabric of their relationships with people at work, in the community, in the home, and in world affairs. The Laymen's Movement for a Christian World has described the field of operation of its members, and the segment "On the Job"[16] epitomizes the goals of several of these groups — goals of oneness between business and a spiritual ethic:

> "In his work the member will look upon his job not only as his means of livelihood, but as an actual and very real laboratory of Christian living. He will consider himself as the head of his own department of research into the workability of moral and spiritual values incorporated into industry and commerce as methods of operation, with as much concentration and consecration and excitement as an Edison working on the discovery of the electric light. He will relate his findings to those of other members so that we may direct the efforts of the Movement in the most effective way toward getting men everywhere to make their work real and positive functions of Christianity.
>
> "He will try to develop the application of the laws of God to his business as his understanding and faith grows.
>
> "This will naturally lead him to a very direct application of spiritual values to working conditions, hours of work, pay, and security in all its forms; and to a concern for the economic health of every person in his firm, in his industry, and in his entire Community.
>
> "He will try to create, maintain, and develop in his job the atmosphere that is available through spiritual conditioning, by means of which constructive action is possible in even the most difficult situation and in the most complex human problems."

Through the holding of discussion groups, prayer meetings, and the preparation and distribution of printed materials, these groups are attempting to increase church attendance, and to make one's religion a guiding design for living in all the areas of one's activity, particularly that portion devoted to daily work.

This writing is not aimed at discussing the role of religion in economic progress, or the need for inclusion of spiritual values in business enterprises, or the ministry in industrial communities, but as these lay organizations are sparked so much by business and industrial leaders, they are included as examples of additional efforts of these individuals to hasten the integration of principled behavior into industry.

The Industrial Chaplain

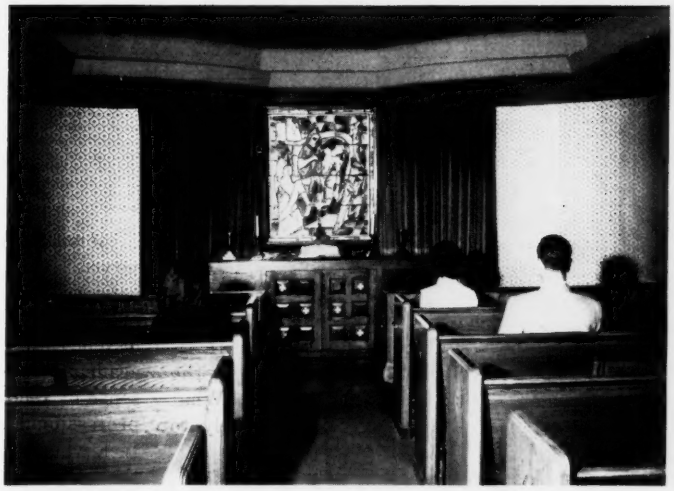
AS THERE are representatives of several disciplines found in industry who are given responsibility for personal counseling — the physician, nurse, social worker, psychologist, union counselor, personnel manager, and infrequently the psychiatrist — it is in order to learn the contemporary thinking regarding the minister in industry, his role, his training, and his qualifications, for he has been added to the list of today's on-the-job counselors.

In an excellent review of the industrial chaplaincy, Wahlberg[17] has pointed out that chaplains had been appointed to the medieval guilds by the Roman Catholic Church and that John Wesley "was in reality a self-appointed chaplain in that he 'was persuaded of the necessity of field preaching as a means of reaching the toiling masses.' " The reason for consideration of such a form of ministry lies in the concern of the clergy for a great unchurched body, not reached through the usual church organization. There is an awareness that structured religion has been out of touch with workers, particularly in the large cities. In rural areas in the Southwest and Southeast, where one-time agricultural workers have become plant employees because of the dispersal of industry to these areas,* the profusion of some of the fringe sects have allowed a close church affiliation to remain. With the development of suburbs in this country — a movement strong enough to make Whyte[18] ask, "Are Cities Un-American?" — churches built initially in the "heart of town," have become surrounded by industrial housing, and its members have become undesirous of a matutinal Sunday return to these areas. As churches have been built in new residential areas, the workers in trades and crafts have felt uneasy about attending services in churches closely identified with management and large-scale ownership. Uncomfortable in less costly garments which have undergone atrophy of style through disuse,

*These moves are based on industry's desire to be closer to new market areas, to reduce distribution costs, to seek more consistent labor markets, to fit better a scheme of national defense, and in certain activities (atomic energy) to locate in relatively isolated areas.

workers are reluctant to suffer appearance comparisons in the larger houses of worship. The workingman, either through his reticence to make his religious needs known or through the church's failure to provide a ministry adequate for his pastoral care, has ceased going to services.

Further feelings have developed in the labor movement that there has been a bias in the clergy who, "on the pretext of defending justice and order," have joined management's team. This has led to strong activity in the Catholic Church in labor areas, the establishment of the National Religion and Labor Foundation, and the continuation of such undertakings as The Clergy-Industry Discussion Group of Greater Cincinnati. Funds have gone, in the main, to the organization and support of churches among middle- and upper-class groups, leaving the other segments without aid, and insufficient motivation to the clergy to accept what is essentially an underprivileged ministry. Wahlberg[17] paints the picture of joint employer-employee efforts, when he writes, "There has been a tendency, in recent years, not to engage in such an endeavor unless it has the endorsement of both labor and management . . . [who have had] difficulties in getting together in many areas apart from setting up a mutually acceptable religious program. It would seem that the church has a responsibility for providing a leadership and service which conforms to the challenge of the will of God. Labor has a special sensitiveness as regards an honest interpretation of the gospel as related to all men and takes a dim view of a Christianity that is screened by management or labor or both before it is presented. Workers often respond to the free gospel of a sect or store front church completely ignoring the streamlined services and faith provided by a paternalistic [sic] company or community."



Chapel in Texas Eastern Transmission Corporation Building, Shreveport, Louisiana. This chapel was furnished by the people of Shreveport and is maintained by Texas Eastern. It is "dedicated to the use of men, women and children of all faiths and all religions. . . . It offers to all — irrespective of race, creed, or color — a calm haven for prayer and meditation."

Chapel in Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma, for employees of the Foundation plus those of the University of Oklahoma Medical Center. This was constructed by craftsmen of the American Federation of Labor of Oklahoma who contributed their time during weekends. Architectural engineering services were donated by a private firm of architects, and building materials were provided gratis by local companies. This chapel is used also by patients and their families.

He delineates the industrial relations interests in Protestant circles as these: (1) Seminary classes, workshops and field trips; (2) Inter-seminary conferences as conducted by Religion and Labor Foundations; (3) Church departments and institutes on industrial relations; (4) Company employed industrial chaplains; (5) Church employed industrial relations chaplains; (6) Worker-priests and worker-pastors; (7) Ministers employed by labor unions and acting as chaplains to labor; (8) Company owned and dominated churches; (9) Church supported programs in special areas, such

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as miners and textile workers; (10) Labor churches; and, (11) Churches cooperating specifically with labor and having a ministry to labor.

Of interest at this moment of writing are those activities centered about the industrial chaplain, for it is his function in counseling that relates closest to the work of the physician. Does it replace this function of the doctor? — and it is a recognized element of the doctor's program in industry — does is supplement it? Does it introduce an effort which the physician has neglected? Does it bring in a mechanism, needed in a plant and, as the company's executives are unfamiliar with the role of the practitioner trained in occupational medicine, is the Clergy sought for its implementation? What manner of man is this minister come-lately to the American job scene?

Rev. Francis B. Sayre, Jr., now Dean of the Washington Cathedral, had five years personal experience in establishing and developing such a chaplaincy in the Diocese of Ohio of the Episcopal Church, specifically in Cleveland. The two conditions which were deemed basic and inviolable in the program were these: (1) Whatever work was to be undertaken would have to be sponsored jointly by the management and the union organization of a given plant; and (2) The chaplain's work should not duplicate that done by the parishes. The focus was that of personal counseling of men in terms of problems arising on the job rather than the holding of services in the factories, and it was hoped that such counsel would relate unchurched persons to the churches of their choice, irrespective of denomination.

There were certain other principles which Rev. Sayre[19] believed necessary for success in this kind of venture. It was his feeling that the church must concern itself deeply with the industrial life of the nation, for the new kinds of problems resulting from this mass industrialization have not been met or evalued. As there are moral and spiritual questions involved, as well as social and economic ones, the concern is indicated. The industrial chaplain must get inside a problem and live with it directly, so that through this kind of observational research, he will determine how the resources of the church might relate to the core of the problem.

There should be "as wide an ecclesiastical sponsorship as possible, and while there can be Protestant unity in this issue, overcoming the Roman Catholic-Protestant split probably will not be possible. There can be no charge of 'denominational proselytism.'"

We in industrial medicine believe that the only ways to develop "a feel" for a plant, its workers, its products, its philosophy, is to go into the plant where manual and machine work is being done. By getting one's shoes dirty, one can begin to understand empathically the world as viewed by the employee. A desk-bound Medical Director foregoes a rich lore of aids in performing his task if he operates exclusively from his office. In parallel, there have been ardent pleas that to produce an industrial chaplain of worth, he must be schooled, in part, in the ways of the factory. Rev. Clair M. Cook, Director of the National Religion and Labor Foundation, has observed[20] that still there is a "real estrangement between the church and the worker, (as noted previously), although it has become somewhat lessened. Because of his own too often exclusively academic experience, the minister usually has a sense of fellowship with the better educated, the professional, the proprietor, which he does not feel where the machinist, the factory laborer, the carpenter are concerned. He knows what a time clock is, but he has never submitted to its dictates."

Seminarians Summer in Factories

It was eight years ago that Cook[21] suggested that Protestant seminaries create a truly clinical work program for their future clergymen. He felt that one way of narrowing the gap between an "academic ministry and a work-centered world" would have the minister actually work in a plant, subject to the same regulations, conditions, and relationships as those to which all other employees were subject. Concomitantly, there would be seminars under skilled leaders. After a single attempt, which was not related to a parent institution, Dean Marshal Scott of the Presbyterian Institute of Labor Relations picked up the concept and, in 1950, launched the first program in Pittsburgh. Two years later, the Institute moved to the campus of McCormick Theological Seminary in Chicago[22,23] where the industrial community could offer a broader variety of work experiences than was obtainable in the steel mills of Pennsylvania. Other ministers-in-industry programs have been inaugurated,[24] and participating in the field work have been such industrial firms as American Can Company, Lindberg Steel Treating Company, Wendnagle & Company, United States Steel Corporation, International Harvester Company, Jones & Laughlin Steel Corporation, Stoner-Mudge, Inc., and Peoples Gas, Light and Coke Company.

With all of these efforts, there were conferences and seminars with top company and union officials, evening lectures on industrial and urban life, and of greatest value, numerous talkfests in the cafeterias, on the job, and after hours, between the students and fellow employees. Discovered by the seminarians was the language barrier between pulpit and pew. When

a student asked a visiting labor leader, "What are the presuppositions on which your union policy is based?" and drew a blank stare, the height of the barrier was realized.[25] On Sundays, the students served as lay workers in city churches — the "worker" point of view was carried over the weekend.

Dr. Scott[26] feels strongly that special preparation is needed for men thinking of an industrial chaplaincy. They should have an understanding of industry and its management problems, a knowledge of the growth of the labor movement, and comprehension of today's industrial culture and the effects of its impacts on the worker. Skills to be acquired include the ability to conduct discussions and services informally, to carry out counseling based on sound principles and to be able to adjust one's handling of Christian faith understandings. As Dr. Scott put it, "In the South he is expected to give a Bible-centered message; in the Northeast he may have a biblically illiterate group that would be bewildered by such a message." The minister must be able to meet and accept all kinds of men, and not be disturbed by behavior patterns, verbalisms, or attitudes that are foreign to his own design of living.

Greater activity in industrial chaplaincies and training programs leading to these posts is seen abroad. In Scotland there are about 300 industrial chaplains who are ordinary parish ministers whose contribution has been "the application of the basic evangelical doctrine of the priesthood of all believers to industry and industrial difficulties."[27] Rev. William M. MacIntyre,[28] organizer for Industrial Chaplaincies to the Home Board of the Church of Scotland believes that the two-fold task of the chaplain is (1) "to make a unique contribution to industry as counselors . . . "; and (2) "to bring an informed critique of human relations in industry to bear in conversations and discussions with representatives of trade unions and management in industry." Further, he shares the view of the clergy of the Church of England which was expressed by the Rev. John R. G. Ragg[29] that, "We do not believe in 'flogging the Gospel from a canteen table-top.' We believe in showing the relevance of Jesus Christ in the normal situations of daily life through the men concerned."

Industry provides these chaplains a private room for personal interviews, much of the work being pastoral in nature. Sick visitation is accomplished and carried out in considerable number are informal discussions with employees in the canteens, meeting with miners, transport workers, airport personnel, and hydro-electric power plant construction workers in remote Highland areas, in addition to persons in offices, plants, steel works, and shipyards. The activities are comparable to those executed by the chaplains of the services, and the ministers are beginning to see a feeling emerge among the workers that the Church "may be relevant in their personal, social, and industrial tensions."

Concomitant with this movement was the formation of the Scottish Christian Industrial Order in April, 1952, when 1500 people convened to establish this organization for Christian laymen in industry. There are Work Branches in the factories, and Church Branches, and a member normally will be in two branches, one at his place of work, and the other in the congregation of which he is a member. The Constitution[30] of the S.C.I.O. states that The Work Branch shall be the spearhead of the Christian Church in industry and shall be constantly concerned that human relations should be on the Christian level, and that industrial organization and method should conform to the Christian standard." Also, "The Church Branch shall be the meeting ground within the congregation of those from different Work Branches, and shall afford opportunity for them to study together the Christian Faith and its implications for modern society, to share their experiences and understand each other's point of view, especially in industrial problems." This lay organization has been interdenominational, and all action has been initiated by the membership and not "from the top." Several publications[31-35] describe the co-operative program between the Work Branch and the Industrial Chaplain; and the core of interest of the movement, which simulates most closely in the United States the general subject of human relations.

Similar activities have existed in England, and much discussion has come to the surface relating to reasons for the industrial chaplaincy, the structure of joint church-work undertakings, and the need for reaffirmation of the Christian ethic in light of contemporary business practices and modern-day value systems. One of the basic differences lies in the discouragement given in that country to the setting up of chapels (termed Christian cells) in industry for it is felt that they "tend to allow Christians to withdraw from their natural industrial environment and to escape into just the same kind of atmosphere to which they escape on Sundays. We prefer such efforts to be away from their industrial setting, so that they can get the whole thing into some kind of perspective."[36]

The Rev. Ragg, Social and Industrial Advisor to the Bishop of Bristol, cited previously, has pointed out that the problem is not "that of the Church in Industry or the Church and Industry, but the Church and the men and women involved in present-day society as conditioned by Industry." The Church in England had little

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hold on the masses of people before the industrial revolution, the Christian concept being nourished in the country parish. With the development of the factory system, even the ties with those parishes were disturbed. Now, industrialization and the crowding of workers in the cities produced a class which could live apparently without "corporate worship and common faith."

In this age, the Church seemed to many to have retained too much which was relevant to the medieval society in which the Church institution was solidified, and appeared to bear little relationship to modern society or the Christian faith as a whole. Clerical leaders, feeling that the view is in error, nevertheless realize that because of its ubiquity, it must be reckoned with. The accomplishments of science have shaken the tenets held by both the theists and the humanists, for there is questioning of the moralistic endpoint of such developments as the thermonuclear weapon, the long-range missile, and the orbital satellite. The social immaturity of our culture shows great disparity with our current technology. In seeking more rewarding lives, there has been a return of church-directed thought. The Church believes that help can be given to the men and women in the industrial society in coping with "their personal relationships, their family life, their cultural needs and their moral perplexities."[37]

There are training programs in England, also, for the preparation of industrial chaplains. For lay workers there is the Industrial Christian Fellowship, wherein they are equipped as Missioners of the Church of England, and there is an I.C.F. Training College in Birmingham for this purpose.[38-40] To help meet the Church's obligation to industry, the William Temple College at Rugby was established in 1947, where courses of varying length are offered which carry out the purpose of the school, which is "to provide a place in which men and women may study the Christian faith in relation to society."[41,42] The students are those who will be bearing some responsibility in industry, commerce, education, the professions, public administration, the social services, and the Christian Church. The goal is integration of contemporary society in the light of Christian faith.

Activities of the Catholic Church

IN THE United States there are about 100 Catholic labor schools, and in the Jesuit-run institutions there is combined in teaching the context of the encyclicals with practical lessons in unionism.[43] The labor priests have been extremely active in the social-action departments of the church, and have supported unionists in strike situations, utilizing "Communism" as the enemy to be fought within organizational ranks. Fear has been expressed regarding the assumption of moral and intellectual leadership within unions by the church.

Anyone reviewing Catholicism as it relates to labor must recall that interest in the worker was given sanction by two famous papal "social action" encyclicals, *De Rerum Novarum* (1891) of Pope Leo XIII, and Quadragesimo Anno (On the Reconstruction of the Social Order) of Pius XI, which commemorated its fortieth anniversary (1931).[21,43] In these, class war and socialism are rejected, and the worker's right to organize trade unions and his right to a "decent standard of living" are given support. The purpose of the Catholic Church in this segment of its activity was stated most specifically in a 1937 encyclical:[21] "Let our parish priests, therefore, while providing, of course, for the normal needs of the faithful, dedicate the better part of their endeavors and their zeal to winning back the laboring masses to Christ and to His church."

There have been worker-priests in several countries in Europe, and their number and activities have been strongest in those areas which are predominantly Catholic. In Spain, the *Apostolado en las Fabricas*, in its seventh year, held some 53 meetings with a total attendance of more than 17,000.[44] Photographs of plant meetings show these priests addressing vast crowds in industrial plants and mines, and working with apprentices in factories. Monthly publications[45] relate the functions and missions of the priests performing this kind of service.

In Ireland, a country largely of practicing Catholics, leadership has been given this movement by the Industrial Relations Committee of the Catholic Societies Vocational Organization Conference.[46] The aim is a type of Christian Industrial Fellowship, wherein religion can be brought into the daily lives of the workers. Holy Mass has been celebrated in about 20 factories, at times with the local Bishop presiding. The Chairman of the Conference[47] has stated that "Four of these make this religious ceremony an annual event when directors, mangement and workers pray together, listen and discuss reports of factory, social and welfare councils and according to custom, dine and amuse themselves in the evening." Four plants have chapels (oratories) built and paid for jointly by management and workers, in which Catholic prayers are recited daily. In at least 50 establishments the Rosary is recited after lunch or at workday's end in one of the plant buildings, and participation is voluntary. No factory chaplains, as such, have been appointed, but there are study groups in Catholic social priniciples, moral philosophy, ethics and economics.

Some 20 industries in Ireland having a form

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of in-plant religious practice, include such diverse enterprises as the manufacturing of textiles, boots and shoes, and glass bottles, in addition to heavy industry, building and construction, milk products, transportation, and sugar beet organizations. France and Holland also have a number of "Christian factories," but specific information is not at hand.

In Scotland, another service to an occupational group is found in the placement of Bibles in hotel rooms, by the Scottish Commercial Travelers Christian Union.[48] This is done in cooperation with the National Bible Society of Scotland. (The term "Commercial traveler" is synonymous with that of "traveling salesman" in this Country.)*

The Clergy-Industry Discussion Group

AN ACTIVE effort to bring clerical and industrial leaders together for mutual discussion has been effected in Cincinnati, where for several years The Clergy-Industry Discussion Group has been meeting to examine "various phases of the American political economy. Their publications have presented both the spiritual and lay viewpoints that constituted their areas of agreement, within which possible solutions to contemporary problems might be found. The goal was a better informed community, for it had been learned that certain vague but critical ideas, relating to American life, which were in the conversational currency of the time were taking the form of "uninformed and somewhat irresponsible talk . . . emanating from groups who were popularly supposed to know better."[49]

Among such discussion topics as Social Agencies and Their Financing, Public Education, Racial Discrimination in Employment, and the Aging Worker, there was presented for review the subject of The Role of the Pastor-Counselor in Industry.[50] It was agreed that industry, cojointly with the medical profession, had demonstrated progressive interest in ministering to the physical needs and welfare of the worker, but no comparable interest had been evidenced between industrial leaders and the Church in providing for the spiritual and emotional needs of "those who have only their services to trade for their wants."[51] If such a program were undertaken, the Group believed that it should offer "counseling on problems of the conscience and personal problems that perplex the mind and soul." It should "avoid theological divisiveness, sectarianism and proselyting, as well as problems arising from phvsical and mental illness which properly should find their basic cure in medicine or psychiatry." Spiritual counsel, the Group felt, "will remove many of the tensions that give rise to unrest, absenteeism, tardiness, inefficiency, and in the removal of such tensions restore the individual to his full level of productivity and enhanced earning power."

A background of understanding of both the problems of the worker and those of industrial management was deemed desirable, and it was expressed that the chaplain to industry is not an industrial relations manager, but a personal consultant in situations where spiritual guidance is the main factor in bringing about adjustment or resolution of a problem. The opinion was diverse as to the desirable source of initiation of a program of this type, (management, labor, the church, or joint efforts), and it was agreed that the individual situation should govern the inception of the idea. The dangers of the programs were realized frankly to lie first in management's or labor's attempt to use the program for propaganda purposes or for selfish ends, for such "prostitution of the program would inevitably lead to trouble and early termination"; and second, in the selection of a pastor-counselor who failed to understand his role, and who would indulge in sectarianism. Roberts[52] has illuminated another danger when he wrote that any "activity, which brings into focus religion, when religious groups have been so competitive and even suspicious of one another, will prevent that work from reaching effectiveness."

These are dangers. These are fears. But has all of this enterprise progressed smoothly and without misgivings or apprehensions? From some industrial sources there have been expressed distinctly negative feelings and attitudes toward the introduction into the workplace of anything connoting religion.

Some Industrialists Have Jaundiced Eyes

IN AREAS where religious affiliations are mixed in somewhat equal proportions, an employer is hesitant to introduce a pastor or a service that is closer to one faith than another. A community with a high percentage of Catholics would tolerate well a visiting priest or a Mass held in a plant. Such would not be true in the South or in New York City where the Protestant or Jewish elements would be in great number. Further, there are disbelievers whose positive feelings toward the company might become unstable were they suddenly to view the organization in the light of its religious goings-on. The counsel of a large chain variety store system said: "It has always been our belief that religion is entirely personal and that each employee should be free to follow the tenets of his or her beliefs. Furthermore it would be almost an impossibility to formulate a religious program acceptable to all employees who are of many religions."[53]

*It is of interest to note that on the gummed slip attached to these Bibles there are specific passages cited for the salesman to read "if trade is poor," "if you cannot have your own way," "if losing confidence in men," or "if prosperous."

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The president of a company of 425 employees which manufactures gear cutting machines and shapers in New Jersey — where the industrial chaplaincy currently is in practice — described these feelings following a trial period of noontime devotional services:[54]

"Our employees feel that these religious meetings in our factory are out of place. It has the earmark of the high pressure evangelist, and does not have the dignified atmosphere that is needed to get ourselves in the mood to absorb sound religious teaching.

"Of course ... each person has his own particular way of worshiping. Therefore, it is possible that someone in the audience might not understand the speaker's viewpoint and his reactions might overshadow the entire group and do more harm than good for the endeavor.

"Personally I believe that there is a place for everything — the shop is for work, the Church is for worship, and each of us has our own convictions as to how and where to worship.

"I do feel that there is a definite need for some properly trained person who could counsel the disturbed employee about his personal problems — someone who could sit down and get the confidence of the individual, and be qualified to give good advice, either religious or secular."

The progress and permanence of the movement have been questioned by clerical leaders. Some have felt that official chaplaincies to industry are experimental and on the decline. The testimonies of their worth, they believe, have been applied in writings descriptive of local programs, characterized by a lack of scientific evidence.[55] Seward Hiltner[56] of The Federated Theological Faculty of the University of Chicago terms the situation "quite unstable up to this point." The editor of *Religion and Health*, with a 20-year background of hospital chaplaincy experience, while cognizant of the acceptance of the pastor-counselor plan at the R. J. Reynolds Tobacco Company, is unimpressed by the general use of ministers in industry either for prayer meetings or for counseling. This is an unfavorable "view of preaching as a way of helping people."[57] From the Diocese of Pittsburgh[58] comes the opinion that the Catholic-Protestant-Jewish conflict is too complicated to permit success in industrial chaplaincies. The efforts of their Church are directed toward parish, pastoral and mission work in industrial communities, working neither with industry or labor as such, but with everyone in the area.

The clerical spokesmen, of different faiths, have felt that the surge of religion in the industrial direction "lacked genuine spiritual underpinnings, that it was far too pragmatic, too 'practical' to suit them, or to inspire real hope."[59] Although businessmen are more responsive now to the financial needs of religion's activities, they are showing little "conviction that they must immerse themselves in the practice of religion in order to live effectively."[60] The interests were utilitarian rather than theologic. Norton Taylor's[59] observations are pungent ones: " ... every businessman talking about heaven ain't goin' there. The discovery by businessmen of some useful truths — e.g., that the way to acquire a sense of well-being is to put in some time in God's vineyards, that good morals are good business, after all, that common fellowship in God smooths out labor relations, that morning prayer tones up the system (so do setting-up exercises) does not constitute a religious rebirth." Not all workers are completely convinced of the worth of fusing work and church interests — at a company in Cleveland, 4000 employees were asked, "Do you find that your religion has helped you in meeting day-to-day problems that arise in your work?" Although 52% answered *yes*, 8% said *no* and 40% stated that they had not applied religion to work problems.[61]

Is The Industrial Physician Being Displaced?

THE HEADING seems to indicate that the writer senses a jurisdictional dispute based on the illegal crossing over of craft lines. The query is rightfully positioned, for one must question the value of these activities as they relate to one segment of occupational medicine, i.e., counseling the employee to resolve emotional problems.

Rarely does one have the temerity to question our great institutions — God, Motherhood, and Country, and to which trio Charles Van Doren[62] has added Education — but the recent barnstorming of America by Billy Graham* has evoked considerable disputatious writing in the popular press. As a result, one is somewhat more accustomed to hearing comments about *organized* religion which are not altogether enthusiastically approving. Rev. Frank O. Holmes[64] has analyzed it well — "It is hard for people to understand that criticism of religion is essential to its health. Of course, the criticism should be thoughtful and in good humor. But no greater danger threatens any important human interest — science, education, politics or religion — than immunity from criticism. Unexamined religion quickly becomes a cover for many forms of deception and exploitation."

Assuming, then, that inquiring comments are beneficial, one can explore this use of ministers for counseling on the job. To draw sharp delimiting lines which will sub-divide the worker into

*There is a connection between this evangelist and industry. When the Graham Crusade was being prepared in advance in Oklahoma City, 200 prayer meetings were held daily at Tinker Air Force Base, an installation of approximately 21,000 employees. Other industrial areas had comparable services.

For those interested in the dimensions of this type of religion, here are some statistics: To prepare this city of almost 300,000, some 10,000 persons were utilized in the build-up, in addition to a large headquarters, 12 telephone circuits, 65 billboards, 55 taxicab advertisements, 60 bus advertisements, and 35,000 car bumper signs. The crusade choir drew 1200 volunteers, and the fairgrounds stadium and extra bleachers could accommodate 20,000[63] — and — Oklahoma City was not a large operation.

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Reverend George Baker of the Methodist Church, Weatherford, Oklahoma, one of a group of chaplains to the Oklahoma State Highway Patrol, with Trooper Gerry K. Abbott, showing the chaplain's identifying vehicle tag.

different professional interest areas is defeating a basic premise, i.e., the concept of the totality of the individual person. The practitioner grounded in and oriented to psychophysiologic medicine cannot separate social from bacterial from psychic factors in his study of the patient in his illness. Similarly, one cannot partition off the worker so that this problem goes to the physician for resolution, this one to the nurse for her ministrations, and this one to the pastor, the most recent arrival at the industrial plant. Also, who charts the employee's course in his seeking of help? Who — to continue with metaphors — captains the ship which will take him on this therapeutic journey? Which discipline functions? Who is charged with helping the emotionally upset worker?

The premise of these immediate paragraphs is that this is the physician's task. It is his task because no one engaged in occupational medicine can concern himself solely with somatic disease, without engaging in disservice to both the employee and the employer. The concomitants of physical or physiologic change are behavior changes, and both need attention simultaneously. Often there are alterations of mood, of affect, or intensification of defenses, all symptomatic behavior in which the knowledgeable physician reads trouble — difficulties at home (domestic relations), in the community (social relations), or at work (industrial relations), to use Braceland's wording.[65] Because of the close interrelationship and interdependence of all of these difficulties which bring the unhappy employee to the industrial physician, he must be skilled in recognizing the emotional problem and in offering reassuring counsel for it.

But do all physicians have these skills, the skills of conducting non-traumatizing interviews, of eliciting material of psychologic significance, and of knowing the benchmarks of their own capacities in effective listening and the indications for referral to professionally competent counseling personnel? Many practitioners at the work scene shy away from these employees who are in desperate need of help because of their inadequacy in dealing with them. Others rationalize their non-intervention by denying their existence, saying that no such problems exist at their plants. It is probably because of these latter physicians that industrialists, employees, and trade unions have sought assistance from the minister. But is the local pastor who visits the organization any better equipped to aid the problem-laden worker? The "clinical" training programs for ministers in industry described previously will familiarize him with new viewpoints, but without instruction in pastoral counseling, he is no better equipped to offer guidance than the pastor without benefit of in-plant work experience. Schools of theology are offering to today's students course material in

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Robin Roberts of the Phillies awaits his turn to speak before a teen-age high school audience, while Deacon Don Towler of the Los Angeles Rams completes his talk. This is one of the activities of the Fellowship of Christian Athletes.

the behavioral sciences, and when hatched, these new clerics will do a better pastoral job because of this. But do the clergymen currently visiting in plants have the background adequate for this "personal counseling" function?

No one is praising or blaming loosely any adventurer into industrial ministry or medicine. But one is struck, on reviewing these religious activities, by the disquieting fact that *the physician has failed in part of his mission of rendering a total preventive medical program.* And the industrialist seeking this kind of coverage has obtained the services of a minister, or the employees have requested them. This statement is made because in some of the same plants where

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pastors are functioning, there are part- or full-time physicians. In those organizations without health facilities, why has the industrialist turned to the clergy rather than to medicine or psychology or nursing? Is he unfamiliar with the resources available in industrial physicians, psychiatrists, clinical psychologists, or occupational health nurses? If he is, why is he? Have we failed to orient the employer to these kinds of skills which are being developed in our training programs? Are we, as Dr. Rutherford Johnstone put it so succinctly several years ago, still talking to ourselves? Why has the message of positive occupational medicine not reached the ears of the employer? Why is it that only the negative goings-on of workmen's compensation disputes represent to him industrial medicine? Has he been so prejudiced by this only contact with a variety of industrial medicine — or actually, industrial surgery — that he cannot read loudly and clearly the message of constructive preventive medicine? This is no place for diatribes against fractures in communication, but somehow managerial and medical leaders must meet on a common discussional ground for the exchange and understanding of concepts.

In essence, these questions are asked (1) Why has the industrial physician not undertaken personal counseling? (2) Why has not a team developed so that the medical practitioner offers assistance in emotional problems, and suggests or arranges referrals to local pastors when counseling for the spiritual phases of these problems, or for spiritual problems per se present themselves? (3) Why is the industrial, in the main, still unaware of the field of occupational medicine? (4) How can corrective communication be instituted? (5) How can joint Industry - Medicine - Clergy institutes be arranged for discussion of overlapping problems?

Until answers are obtained, confusion will persist in the indications for actions to be taken by the employer, the worker, the minister, and the physician in bringing together the proper counselor and the problem-laden employee.

What Are the Values?

NUMEROUS are the benefits accruing from these religious programs at work in the area of spiritual values. This has been given voice by both clerical and secular observers, and will not be reviewed here, for this type of positive return will be noted from any association with a religious endeavor, irrespective of setting. More to the immediate point of this writing would be those advantages measured by the usual industrial criteria of effectiveness in production or by occupational health standards.

That work totals are affected has been recognized. Kugelmass[66] has noted that there was a period in the Severance plant when shop rules were being broken and production fell to a new low. The owner was discouraged, and at a prayer meeting spoke of his concern for the company, its employees, and its customers. He said, "You and they have placed confidence in us and unless God undertakes to help, I won't know what to do." A change took place, and within a few weeks there was an increase in production of 25%. Comparably, when a stove company in Dallas added a minister to its staff, "production efficiency zoomed 10% in eleven months."[67]

In a coffee company, the president[68] has noted this: "In the sales meeting, we devote about 10 minutes of the program to our chaplain and we inject into the meeting some religious thought, which over the long pull, will, in my opinion, have a very definite effect on sales. After all, the greatest Salesman that the world has ever known expressed it very clearly when He said, 'Do Unto Others As You Would Have Them Do Unto You.' "

The department store in Lincoln, opening with a moment of silent prayer each morning, has demonstrated some values in this action, for its president[69] has declared, "I am confident it has played no small part in the growth of our business." Other worthy results have been described by the owner[70] of a cleaning and dyeing company: "All of the friction which used to be present among the personnel has gone and now nothing but perfect harmony exists. Our labor turnover has been reduced to a minimum and speaking from a business standpoint our production has been greatly increased both in quality and quantity. However, this was not the idea we had in mind when we started the meetings."

Where devotional services are conducted each Monday by the company's president[71] in an aviation manufacturing plant, his feelings are that, "One big advantage we've gained is in the satisfaction that comes with giving God a few moments of tribute and thanks. One other advantage that we who lead these meetings and who are the top management of this company certainly gain, is in the knowledge that we are less likely to be unfair to our employees after having, by our public actions in front of them, represented ourselves as being otherwise inclined.

"The over-all effect of these Meetings is not known. If it has no other effect, it places employees and management for a short time each week in an atmosphere of kindliness that can only spring from mutual humility toward and praise of our Maker. One cannot repeat the Lord's Prayer in unison with one's fellowman without absorbing a little of the spirit of Christ from that experience."

An increased interest in the job is manifested

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at another cleaning and dyeing works. The owner has written,[72] "One very striking example is the congeniality that our employees now seem to have toward each other as compared to the direct opposite before our devotional program was initiated. The employees seem to take a greater interest in their jobs and co-workers."

Production was increased in a Georgia plant manufacturing farm machinery. The executive vice-president has voiced his conviction in this way:[73] "We are convinced that the Devotional period is very helpful to all of us here at Lilliston. In fact, we are not only helped mentally, spiritually, and physically, but there is every indication that production is higher on Thursday —in spite of 15 to 20 minutes taken out of the work day."

In Canada, another reason for the program is offered, and presumably the desired results have obtained. The Vice-President (for operations) of a steel plant points this up succinctly: "This chaplain service is merely a method for Atlas to stand up and be counted. There is in our district considerable communistic activity (which is legal in Canada) and we wish to leave no doubt in anyone's mind as to our stand. The Management wishes all the members of Atlas to realize that they are part of a Christian firm and that we are trying to do business in that light."

Finally, another opinion offered is that of the public relations director[74] of a national oil company: "Undoubtedly, an employee beset with a problem might well find relief and solution through the worship services and therefore be less accident-prone or less likely to be absent from work."

Among 15 advantages noted by the Ministers Research Foundation in its report on industrial chaplains[75] are these which relate to job values: (1) "On-the-job religion raises worker morale to a new high"; (2) "It improves the entire emotional atmosphere of large and small departments"; (3) "Tensions between employees and employee groups lessen."

Obviously, these are opinions, undocumented by scientific observations and lacking in comparison with studies of control groups. There is a feeling, though, that advantages do accrue to the company, and there is no hesitancy in admitting these. But are these the reasons either for having a visiting chaplain or for holding services on plant property? Do these secondary gains lead to the permitted perpetuation of the programs? What are the unconscious motivations involved? One is in the same dilemma in trying to analyze this problem as were the nuclear physicists who, during World War II, were called upon to develop a destructive agent in direct opposition to their feelings regarding world peace. Their feeling of guilt was strong, and many were the activities after the war to establish programs for peacetime uses of atomic energy, to eliminate much of the secrecy, and to further communication among scientists. Oppenheimer[76] expressed it well when he said, "In some crude sense which no vulgarity, no humor, no over-statement can quite extinguish, the physicists have known sin, and this is a knowledge which they cannot lose."

How does the businessman correlate in his own thinking the profit motive with the inclusion of spiritual values on-the-job? Apparently it can be done, for otherwise what would lead to the intensive participation of industrialists in nation-wide efforts such as the Laymen's Movement for a Christian World? Much has been done to introduce the "Christian ethic" into business, but what is the reason? Is it expatiation of the kind of sin referred to by Oppenheimer? Is it because of feelings of guilt developed by business practices extant before the socially conscious undertakings of the third generation of the Ford family or the Rockefeller Foundation? Is this a kind of sweet medicine to cover the uninspiring work of the line-paced operation in the factory? No one can say with any voice of authority because no study — as mentioned above — has been conducted which would confirm any proposed hypothesis as to the value of this variety of industrial relations activity. The variables are too numerous to attempt correlations off the cuff.

In any event, whatever the values, a program of religion in industry cannot patch the sick body of impaired interpersonal relations at work. Goyder[77] in "The Future of Private Enterprise" structured the thought solidly when he wrote, "No religious revivals, no political concession, no social services, no leisure amenities, no concerts, music-halls, swimming baths, nor free ice-cream can be a substitute for an industrial system which recognizes the dignity of man and his right to participate in the creation, direction and expansion of industry."

In substance, there are values apart from spiritual uplifting which are found to relate to the introduction of devotional services and chaplaincies in industry. The dimension, the permanence, and the meaning of such values require quantification before factual statements about them can be offered.

Summary

1. THE current resurgence in religion has been seen in a great church building boom, increase in church attendance, and the utilization of telephone systems, stadia, and contemporary communications systems for the building of spiritual values.

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2. An analysis of this movement has found a conflict between the sincere religionist concerned with the reestablishment of moral and ethical principles of behavior and the commercial offering of religion on a mass basis.

3. Historically, the introduction of religious activities into the work scene can be traced to the early Factory Acts of Great Britain, the introduction of chaplains in the Armed Services, and the moderate employment of prayer in selected industrial plants.

4. One hundred industrial organizations carrying out religious activities were reviewed to learn of the variety of these endeavors as encountered during the period of World War II to the present. A summary of these activities follows:

(a) Devotional services are held by 71 of the companies studied.

(b) A part-time chaplain is encountered in 18 of the organizations and there is a full-time chaplain in 13 of the concerns. The chaplain conducts personal counseling in 14 of these.

(c) Twelve chapels have been established for the use of employees.

(d) Bibles are distributed to employees or customers in six of the companies and six others distribute a variety of religious publications.

(e) Devotional services are broadcast in four of the plants.

(f) A special Clergy Day has been held by three organizations for the orientation of local clergymen in the activities and goals of these companies.

(g) Other activities include the establishment of special foundations for the carrying on of these programs, the utilization of ministerial personnel for absenteeism control, the publication of a church directory, and the showing of religious films.

(h) Of the 100 organizations, five were active in this manner during World War II only and eight, previously so engaged, have discontinued these enterprises.

(i) The type of industry concerned with this activity covered 33 categories, including heavy manufacturing, personal services, communications, sheltered workshops, and professional athletic teams. Machinery, automobile, and heavy equipment manufacturing companies represented the greater number (16) of firms interested in bringing religion to the worksite.

(j) A geographic distribution showed 35 companies in Texas, 12 in Oklahoma, 7 in New York, with the remainder spread in 21 states, Canada, and the District of Columbia.

(k) Management sponsored the program in 62 of the firms, the employees served as sponsors in 19, and in 14 joint backing was encountered. In three situations the local trade union had initiated the program.

(l) Of 71 companies conducting devotional services, 24, or 33.7% were held on company time, one (1.4%) on time shared half by the company and half by the employee, and in the remaining 46 (64.8%) the services were held presumably on the employee's time.

5. Lay groups have been organized among businessmen to heighten the religious feeling in an industrial setting. The activities and composition of five of these organizations are presented and included among the members are some of the country's top corporation executives.

6. The industrial chaplain, a newcomer to the disciplines in industry, given responsibility for personal counseling, found his origin in the medieval guilds and it is his goal to bring religion back to workers who have, through feelings of social inadequacy, been out of touch with structured religion.

7. In an effort to produce clergymen best fitted to work in industrial plants, clinical programs have been developed in industry which through summer employment permit the seminary student to work with factory employees and learn of their problems, feelings, and spiritual needs.

8. In Scotland, 300 industrial chaplains contribute their efforts to the work plant in addition to serving as parish ministers, and there are colleges in England for the specific training of industrial chaplains.

9. The Catholic Church has been active in the conjoining of religion and work through its labor schools, labor priests, and social action departments.

10. Papal encyclicals give sanction to social action of this type and worker priests are found in Spain and Ireland in great number.

11. A typically American institution, the clergy-industry discussion group, has been active in Cincinnati for several years to bring about a better understanding of the problems of the worker and those of industrial management by the clergy, and the role of the industrial chaplain has been delineated by this group.

12. Many industrialists have looked with disfavor on religious services in the plant because of the mixture of denominations present among employees and the need for separating the workshop from worship.

13. Clerical leaders have questioned the permanence of the movement in industry and have felt it to "lack genuine spiritual underpinnings . . ."

14. Of primary concern to occupational medicine is the possible displacement of the physician in industry as a personal counselor. It is believed that while the task of counseling need not be exclusively that of a physician, his professional training should create a practitioner more skilled

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in resolving the problems of the upset worker. The denial of emotional problems of employees by industrial physicians has contributed to the use of ministers by industrialists for counseling. This bespeaks a failure on the part of the physician in rendering a total preventive medical program. The invitation extended to ministers to come into industry is caused by a lack of awareness of the employer of the field of occupational medicine created, probably, by poor communication between medicine and industry.

15. Omitting the spiritual values accruing from these religious activities at work as being outside the purview of this writing, positive benefits are seen in production increase, business growth, improvement of morale and lowering of labor turnover. In addition, there has been noted increased interest in the job, diminished absenteeism, and lessened tension among employees.

Conclusions

I. THE introduction of religious activities in the form of devotional services, creation of chapels, and addition of industrial chaplains, has represented a movement of greater strength in the South where a more solid Protestant plant population is found.

2. The continuation or growth of this movement can not be predicted at present in view of the surges and declines in the numbers and appreciation of these undertakings.

3. Opinion is moot among industrialists, the clergy, and personnel directors as to the worth of such activities, and suspicion is high among observers as to the actual reason for perpetuating religious programs at work, i.e., the profit motive and the church attendance motive being the true *raisons d'etre* for the activity, rather than promulgation of the Christian ethic.

4. Industrial medicine must undertake self-inquiry to determine why functions logically belonging, in great part, to that specialty, have been subsumed by a professional group normally extramural to the industrial installation.

5. No scientific observations employing study and control groups have been carried out in this area to determine the worth of religious programs in industry. No documented evidence exists beyond personal opinion as to the value or non-essentiality of these programs. No statement can be made as to the improvement of occupational health through the addition of any facet of religious endeavor at the work scene.

6. It is recommended that properly designed research be undertaken in those plants where religious programs are current to establish their worth if such exists.

7. Physicians in industry should increase their communication with employers, present or prospective employees, and unions in order to familiarize them with services enlightened medicine can offer a progressive management and interested plant personnel.

Acknowledgement

GRATEFUL acknowledgement is made to Helen Duckett and Bobbie Hurt for their assistance in the compilation of the material and the preparation of the manuscript.

[NOTE: A mimeographed copy of the bibliography, containing 77 references, and a list of 84 additional references, may be obtained from the author.]

Central Repository for Medical Credentials

THE SECRETARY GENERAL of the World Medical Association announced that on July 1, 1958, the services of a Central Repository for Medical Credentials will become available to the doctors of the world. All judicious precautions will be exercised to protect the records of depositors. During war and national uprisings, medical records are destroyed or lost. The plight of hundreds of doctors who fled from their homelands during World War II and the more recent Hungarian uprising stimulated The World Medical Association to undertake means assuring the doctor that he will always be able to prove himself medically trained and fully accredited to practice medicine. Today, many doctors are working as laborers or research assistances as a result of the loss or destruction of their original credentials and the lack of a protective service in which authenticated copies could be deposited. While the fundamental basis of the medical profession is man's humanity to man, and one of the objectives of The World Medical Association is to promote world peace, the scientific education of the doctor directs his objective analysis of facts—world wide as well as medical. The Central Repository for Medical Credentials is a necessary precaution to assure the doctor that he can always prove himself medically qualified to practice his profession should the diplomats and the governments they represent fail in their efforts to achieve world peace. Additional information on the Central Repository for Medical Credentials is available from The World Medical Association, 10 Columbus Circle, New York 19, New York.

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Cardiac Emergencies

SIDNEY EDWARD CHAPIN, M.D.
Dearborn, Michigan

A CARDIAC emergency calls for careful decision. The on-the-spot physician must determine whether the fainting spell, the chest pain, or the dyspnea is benign and not alarming, or an indication of a grave cardiovascular emergency capable of causing death.

In few other instances is a physician called upon to act so decisively in so short a time. It takes a tentative diagnosis, and immediate treatment to pave the way for the future therapy — yet, under these circumstances the physician must remember to keep hope alive, be kind and reassuring, without being in a hurry, though frequently, this must be done in three or four minutes.

Acute heart conditions require emergency treatment more than do those of any other organ, making the term "acute heart" even more appropriate than the expression "acute abdomen."

A most disheartening situation occurs when a physician is able to make the correct diagnosis of a cardiac emergency, but then finds he does not have the suitable medication available. Drugs frequently needed include the following:

Demerol® Solution - 50 mg/cc
Morphine Sulfate - Solution or ¼ gr. tablets
Atropine Sulfate - 1/100 gr. tablets
Phenobarbital - ½ gr. tablets
Luminal Sodium - 2 gr. ampules
Sodium Amytal® - 3 gr. capsules or 7½ gr. ampules
Dramamine® - 50 mg/cc solution
Sterile water - in rubber-capped vial
Aminophylline - 3-¾ gr. IM ampule
7½ gr. IV ampule
Cedilanid® (Lanatoside C) - 4 cc ampule
Digoxin (0.25 mg) tablets (and) - 1 cc ampule (0.5 mg.)
Epinephrine (1:1000) - 1 cc ampules
Ephedrine - ¾ gr. capsules
Nitroglycerine - 1/150 gr. tablets
Quinidine Sulfate - 3 gr. tablets
Pronestyl® - 250 mg. capsules and 100 mg/cc ampules
Mercuzanthin® (Mercuhydrin) 2.2 cc ampule
Thiomerin® - 10 cc vial (1.4 gm.)
Wyamine® 15 mg/cc - 1 cc ampule
Vasoxyl® - 20 mg/cc - 1 cc ampule
Depo-Heparin - 200 mg./cc

There is nothing more discouraging than to have a patient, who is just beginning to respond to a dose of morphine or Demorol, suddenly start vomiting. This is the reason Dramamine is included in the list of drugs. The morphine tablet may be dissolved in the Dramamine solution. Demerol and Dramamine may be mixed in the same syringe, and given as one injection. Two grains of Luminal Sodium dissolves rapidly in one cc of sterile water.

Levophed® was not included in the list of pressor substances to be used for shock because it must be given in an IV of 1000 cc solution of glucose slowly, and since the drip must be regulated according to blood pressure readings, it is not a practical method except after admission to the hospital. Wyamine or Vasoxyl IM will frequently hold the pressure for the 15 to 45 minutes (often longer) that may be required for transportation to a hospital.

The use of oxygen is, of course, without question, but whether it should be part of the emergency equipment depends on the locale. In some industrial plants or offices where well-regulated Medical Departments are organized with responsible nursing and/or medical personnel in attendance, it is feasible to have oxygen available. Elsewhere it may not be so.

A single dose of IM Depo-Heparin may be given without laboratory determinations in advance. Frequently it will give the patient who is developing an infarct a head start on his treatment. Dicumarol® should NOT be given without a previously determined prothrombin time.

Coronary Disease

WITH proper equipment and these drugs on hand the physician is ready for a call from a man with anterior chest pain. Whether his name is Adams or Zyznyski, the patient with chest pain usually fits the following description: average age first attack — 38-55; majority of episodes occur during working day; muscular person — good physique; drinks and smokes more than average; shorter and wider — body and fingers; managerial, executive, professional or skilled labor.

When it is realized what his complaint is, the following conditions may be expected: heart pain (angina to infarction); dissecting aneurysm; pulmonary embolism; pericarditis; pulmonary hypertension; GI tract spasm; hiatus

Read at the Michigan Industrial Medical Association Meeting, Fort Shelby Hotel, Detroit, Michigan, 1957.

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hernia; spontaneous pneumothorax; and neurocirculatory asthenia (the patient who cries).

When it has been determined that the pain is cardiac in origin, the decision must be made among: angina pectoris; coronary insufficiency; coronary thrombosis; or myocardial infarction.

Angina pectoris is merely a symptom and frequently represents only a temporary deprivation of blood. It is a transient ischemia which corrects itself rapidly. It frequently occurs in the presence of a normal electrocardiographic tracing; that is, before any actual damage has taken place. When it occurs following an infarction, it represents the struggle of the collaterals to keep up with the patient's demands.

Insufficiency, on the other hand, though frequently occurring without actual cardiac damage, is a more imminent situation, as we travel along the course toward the actual infarct. The pain and discomfort of insufficiency are more acute, may last longer, and are frequently accompanied by a slight sweat, coldness of the hands, and thus resemble a thrombosis or infarction. It is surely a more important omen of pathology than angina alone.

Thrombosis may occur without infarction, and those conditions will be discussed later.

The characteristics of angina pectoris are: sudden onset; anterior chest; vague discomfort; exercise induces; and short duration. Angina is always of short duration, and it is important to remember that the discomfort is often vague and difficult for the patient to describe. The treatment consists of:

B. P. up	B. P. low
Nitroglycerine	Demerol
Demerol	Phenobarbital
Phenobarbital	Aminophylline
Aminophylline	Rest
Rest	Observation

Since it is difficult to differentiate the patient who starts with what appears to be a simple angina, but who may go on to run the gamut of the pathological process to infarction, the treatment of angina has been divided as you see above. The patient with a low pressure at examination cannot afford to have his pressure lowered further by nitroglycerine. This mechanism, it is felt, may be responsible for precipitating a thrombosis by further lowering the intra-coronary pressure. That is why "Observation" was added to this list. This patient, in particular, should be watched for a while to see whether his symptoms progress. It is wise to watch, in this connection, for the patient who develops a headache as a result of the administration of nitroglycerine. This patient may often be tagged as a migrainous individual with its neurogenic implications.

Some points to remember are: most *angina* is related to effort; 50% of *insufficiency* is related to effort — other factors include hemorrhage, tachycardia, surgery, excitement, meals; occlusion and infarction are only rarely related to effort.

When infarction occurs, the situation changes: chest pain is more variable (it usually radiates more and may be epigastric, cervical, or masquerade merely as arm, jaw, or back pain); shock occurs; heart tones are distant; blood pressure falls; heart failure may follow; arrhythmias may occur.

The treatment is as follows: administer Demerol or M.S. with Dramamine; rest (comfortable position); oxygen; for shock — Wyamine or Vasoxyl; depo-heparin; aminophylline, diuretic, digitalis - if failure occurs; quinidine - if arrhythmia occur; and send to hospital.

The patient who has had a recent infarct may have an attack of acute heart failure. This also applies to the patient who has been working in spite of a valvular lesion due to rheumatic heart disease or long-standing hypertension. It also occurs in the older patient with long-standing pulmonary hypertension (chronic bronchitis and emphysema) particularly complicating an acute infection such as a bronchopneumonia or pneumonitis.

Symptoms of acute heart failure (pulmonary edema): history of nocturnal dyspnea is usually obtainable; cardiac asthma (wheezing) is present; labored and accelerated respiration occurs; sputum is frothy (pink?); blood pressure is up and pulse rapid.

The treatment of this acute failure follows: keep the patient's head up, administer MS (IV) or Demerol IM c Dramamine, aminophylline IV slowly (7½ grs), cedilanid IV (8 cc), diuretic IV (2 cc), oxygen, phlebotomy (500-600 cc); and apply tourniquets.

In this situation one must be swift and bold. These treatments should be accomplished rapidly. It is recommended that a large-guage needle be inserted into a vein so that the medications may be injected in the order listed by merely changing syringes, bearing in mind to introduce each substance slowly. Then after a few minutes the syringe may be removed, stemming the flow of blood with the barrel of the last syringe, and the same needle may be used for a phlebotomy.

Arrhythmias

Now let us turn our attention to the man who complains of palpitation — the so-called arrhythmias which are paroxysmal in nature.

Characteristics of paroxysmal auricular tachycardia: sudden onset; patient is usually nervous; no underlying disease. Symptoms: palpitation, dizziness, precordial pain; rate 180-220; absolutely regular; prognosis *excellent.*

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Characteristics of paroxysmal auricular fibrillation: sudden onset; rheumatic heart, hypertension or ASHD or Grave's disease are underlying pathological states; rate at apex — 120-180 with pulse deficit; pulse rate 70-120 — *irregular.*

Characteristics of Auricular flutter: sudden onset; organic heart disease present (rheumatic or arteriosclerotic); neck waves, 250-350/minute; and pulse quite variable, 125-180 depending on block (1:2, 1:3, 1:4).

The treatment of arrhythmias: Tachycardia: sedative and quinidine (orally); eyeball or carotid pressure; cedilanid (4 cc IV slowly); then repeat pressure. Flutter and fibrillation: Cedilanid followed by Quinidine.

When treating the flutter or fibrillation, one must be alert for the possibility of an ensuing heart failure. This complication, when it occurs, should be treated as outlined above.

A word should be injected here about traumatic heart disease. Penetrating chest injury: blood loss; congestive heart failure and/or shock may indicate heart damage. Nonpenetrating chest injury: (subendocardial tear or myocardial contusion) arrhythmias develop, and precordial pain present. Needs EKG study. Treat as coronary, *except for anticoagulants.*

Syncope

THERE is some significance to the transient fainting or "weak" spell in the man in the coronary age group. Dr. Beck's group in Cleveland explains transient ventricular tachycardias and fibrillations which may be the cause of these weak spells, or perhaps the cause of death, as being the result of adjacent "pink and blue areas" in the heart. The pink area is the area adjacent to the ischemic area, and sometimes with the administration of oxygen this area may get *very* pink. In contrast, is the blue or ischemic area of impending or actual infarction. The proximity of these two dissimilar situations, it is explained, may be the origin of a ventricular tachycardia or fibrillation, which, in turn, may cause transient brain anoxia (a weak spell) or actual death.

However, let us see what syncope involves:

Neurogenic syncope — *Factors*: fright, pain, emotion (sight of blood), suggestion, pressure on body, and hyperventilation. *Symptoms*: nausea, sweating, palpitation, dizziness, light-headedness lasts seconds — if longer, hysteria, and usually no blood pressure or pulse changes. *Treatment:* lower head, glucose for hypoglycemia.

Carotid sinus syncope — *Factors*: neck pressure, head turning, cerebral arteriosclerosis, digitalis, and 2^0 to hemorrhage. *Symptoms*: no premonitory symptoms, short duration, may convulse, blood pressure *falls,* pulse *decreases, Treatment:* ephedrine and atropine indicated.

Postural hypotension — *Factors:* tabes, Addison's, diabetes, spinal cord tumor, and idiopathic. *Symptoms:* light-headedness and dizziness of short duration, no convulsion, blood pressure *falls,* and pulse *increases. Treatment:* Put patient in prone position and apply pressure on abdomen; administer ephedrine.

Cardiac syncope — *Factors:* heart block (Stokes Adams), ventricular tachycardia, or other arrhythmias. *Symptoms:* dizziness, palpitation, chest pain, nausea, and epigastric pain of short duration, convulsion may follow, blood pressure *falls,* pulse variable.

Tussive — *Factors:* severe coughing, bearing down. *Symptoms:* dizziness, and tightness of short duration, no unusual findings.

It is my opinion that the electrocardiograph machine has no place in the treatment of a cardiac emergency. To depend on the machine and ignore good clinical judgment is a breach of trust. All too often patients are discharged from hospital emergency rooms, or sent home from doctors' offices because the tracing was negative! A man with chest pain, shortness of breath, and weakness needs to be handled deftly.

Behind the Mask

DATA developed since the opening of the Consultant Clinic for Alcoholism at the New York University — Bellevue Medical Center shows that as many as 50% of all industrial cases may be early alcoholics. Advanced cases, the drinkers who go on prolonged benders, are comparatively rare in industry. They simply don't last. This is the major difference between alcoholism in business and in the community at large. Consolidated Edison's policy specifically cites identifying the problem drinker as a supervisory responsibility. The Medical Department shares it only when problem drinking is masquerading as another illness.

— From "Do You Have a Hidden Man on Your Payroll?" by S. CHARLES FRANCO, M.D., in *Supervisory Management,* May, 1958.

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Testimony of the Doctor in Court

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FOR the physician who more specifically concerns himself with personal injury cases, whether they be occupational disease, accidental injury, or other types of disease or injury, the need for him to testify at the commissions, and in the courts, is inevitable. Therefore, it behooves him to be cognizant of his conduct as it pertains to or affects those who are in the courtroom. No matter what category of witness, be he for the claimant or the defendant, as a physician, he must adhere to the principles of his profession and be considerate of the effect of his words or implications on the claimant, who is involved in the litigation, and who usually is intently listening to all the testimony.

He cannot control the testimony of others, but the physician — without whom there could be no medical case — is literally the star performer and the impact of his words on the claimant is rarely less than stupendous, causing this person's emotions to ebb with hope and flow away with despair following every utterance and gesture he makes.

Except for the "accident-prone" person we see so often in industry, few people have more than one serious accident during a lifetime; and an injury that will lead to legal action is seldom considered a probability. The average person, consequently, is rarely prepared to meet such an emergency, plus the additional burden of hospital and medical expenses, while unable to work. Much anxiety is created and the patient looks forward to both physical and financial recovery; his personal injury case becomes the most important thing in his life. All of his faith is placed in his physician and his attorney. Unquestionably, he has mixed emotions to the doctor's response to the questions of direct and cross-examination. The doctor testifying, who has concern for the claimant, has a great burden to bear; there is no question that he should adhere to the truth and scientific fact, but he must continuously temper his response so that no irreversible emotional damage is placed upon the patient.

From my experience, I would say that this responsibility is assumed by the physician often, but not often enough. A number of situations come to mind where thoughtlessness in answering, and thoughtless interrogation (attorneys, too, are often inconsiderate), have, no doubt, caused havoc in the mind of the intently listening claimant.

One case in particular, involved a chrome worker, in whom the diagnosis of carcinoma of the lung was made. After removal of the lung, the pathologist's examination failed to reveal the malignancy. Much medical testimony was produced by the physician, trying to justify the surgery with no concern, whatsoever, for the patient, who was left spellbound after the doctor left the stand. Can you imagine what turmoil developed in him? Did he have cancer, or was his lung removed for nothing? He seemed to be a mature, rugged man, but one could see the helpless, heartbreaking changes in his features as he sat in the hearing room.

I don't think one has to make a study of these cases to determine whether their personalities have been engraved with emotional trauma when such lack of concern exists in condemning them, during testimony, to permanent disability — be it true or not. Many times, the physician will portray his patient as a hopeless cripple on only subjective findings and a poor prognosis, when the patient needs nothing more than financial recovery to help him back on his feet. True, such culpable line of testimony may cure that financial need; but, is it really a satisfaction to a patient, who may honestly feel he has, or will have, some permanent disability as the doctor's testimony predicts. True, also, there are many variables, such as malingering, exaggerating, and even lying, but that is another subject; for, this time, I am thinking only along the lines of the sincere claimant and the somewhat sincere doctor.

I mentioned before that the patient has mixed emotions toward the doctor — is it any wonder? On one hand, he is trying to help the claimant's case and correct the financial need, but on the other hand, he is putting a noose around this patient's neck by emphasizing the seriousness of the injuries.

Now, what about the doctor for the defendant — the same mixed emotions must necessarily develop in the patient's mind. Only, generally speaking, the claimant begins by disliking this

Presented at the Forty-Second Annual Meeting of the INDUSTRIAL MEDICAL ASSOCIATION, St. Louis, April 24, 1957.

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physician, for it is he who attempts to take away the Greenback plaster. On the other hand, this witness generally does not inflict on the claimant's mind the notions of disablement. In fact, he lightens that burden, be it true or not.

The claimant, as a patient, if badly injured and truly disabled, goes through great emotional strain, not only from the injuries and the pretrial problems, but during litigation and often after litigation. Financial reward does not always cure these people. In fact, I have seen some made worse and even die due to the extra burden of mental anxiety. The term, "traumatic neurosis," is not always a stage prop in the courtroom.

A relatively young man suffered from severe flash burns to both eyes. The harsh, much exaggerated, testimony of his own doctor led him to believe blindness was a great possibility. A fairly large award was given through the cleverness of his lawyer. Several months after trial, with the anticipation of blindness, the patient took his own life, although his eyes had improved in the interim.

I do not want to emphasize that this is at all a common occurrence, but it happens and, therefore, we, as physicians, must realize that such dangers do exist.

Now, consider the claimant as a patient, who is not so badly hurt, who goes through month after month of pre-trial physical examinations, continuously over-emphasizing his ailments, will not uncommonly develop a fixation about his alleged disabilities and reasonably soon, he honestly believes that he has real trouble. The trial procedures can add more fuel to the fire and soon, we have a sick patient; maybe with some financial gain, maybe with none or little. If litigation had not been started in such cases, there would be a great probability that the claimant would be well quite early, but now, even after litigation, money or no money, this person too is in trouble.

In spite of what I have already said, the majority of litigants, as patients, once finished with their legal hassle are more anxious to return to their prior responsibilities or usual occupations. Generally, they are glad to end the painful, harrassing experiences with judges, juries, the terrifying atmosphere of the courtroom, of partisan doctors and cross-examining lawyers. These people generally have the will to assume their responsibilities and do not wait for completion of litigation. They return to work as soon as they are able and sometimes, even before they are able. These persons are usually more emotionally stable, and fortunately, let me again say, they are in the vast majority.

On the other hand, there are some persons in this life, who think the world owes them a living — these are the arrogant, exaggerating and malingering claimants frequently schooled by their attorney. These are the ones who are secretly happy with a real disability and the ones who convince themselves, as well as others, that they are disabled even if they are not. Disability is their crutch, and excuse to be dependent. They do not want to work and are, therefore, poorly rehabilitated. But, they are in the minority.

THE reaction of counsel to the testifying doctor is interesting. How do we appear to the attorneys? In an address delivered before the Wednesday Law Club of the Baltimore Bar, the speaker advocated the use of impartial medical testimony and spoke of the efforts in Maryland and in other states to set up such a panel of physicians, who could be called upon by the courts, in order that the jurisdictions could obtain medical testimony that would be unquestionably impartial. The speaker, an attorney, prefaced his remarks with some rather scathing inferences about the professional expert witness. I am going to quote him: "The expert witness may be defined as a partisan (as distinct from an impartial) medical witness. He is a physician, employed to examine a claimant for the purpose of testifying in a case." Now listen to this. "The reason for his employment is his value as a witness — not his skill as a physician. He is essentially a paid partisan witness — the extent of his partisanship depending upon the elasticity of his conscience. He brings discredit to his profession and he plays havoc in the court. Some so-called experts testify solely for plaintiffs and are known as plaintiffs' experts; others testify solely for defendants and are known as defendants' experts and still others indiscriminately shift their allegiance back and forth between plaintiffs and defendants. The situation is not uncommon wherein the appearance of a Dr. Doe requires the counterbalancing influence of a Dr. Roe.

"The expert witness is personable, if not engaging. He would appear to be modest, and testifies to his qualifications with becoming hesitancy under the careful prodding of the examining attorney. The jury is duly impressed by his manner and his background and are confused when two such eminent witnesses, representing opposite parties, seem to be talking about two different injuries incurred by the same claimant in the same accident."

This observation of us goes on as follows: "The opposing lawyer is wondering how best to approach the imposter. This expert witness is dangerous — he must be approached with great caution. He often withholds his more deadly fire for cross-examination — he is badly hurt in cases where experienced counsel, recognizing the bait, waives cross-examination. Judges and lawyers

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recognize the expert for what he is, but the jury is grossly misled. The jury has no means of knowing his worth and must take his testimony at face value.

"The law suit is no scientific inquiry, but at least it seeks the truth. The expert witness does not aid this search since, he, like the party litigants, is thinking in terms of the verdict and not a dispassionate evaluation of medical facts.

"If a case is largely dependent upon subjective findings, the plaintiff's doctor accepts all such findings and utilizes them for the maximum benefit of the plaintiff. The defendant's expert refuses all such findings, and since there are no objective findings, finds no disability. The difference between the enthusiastic belief in the subjective findings and the equally enthusiastic disbelief in the findings, represents the difference in the opinions. There always seems to be some evidence or some piece of evidence which can be exploited or interpreted to prove the case of each expert.

"The plaintiff's expert evaluates his findings in favor of the plaintiff. The defendant's expert evaluates his findings in favor of the defendant. The case then becomes a trial of partisan witnesses. Somewhere in between such partisan evidence lies the truth."

I purposely included a large segment of the quoted talk because it covered a good many facts that I had intended bringing to your attention.

Enough said — do you agree that there may be some justification in this criticism? It is a rather bitter pill to swallow, and I am inclined to believe that more than just this one attorney feels much the same way.

I would like to talk briefly about how the physician should really behave with regard to his manner of testifying.

In the first place, he must perform his task with the greatest respect for the court and all of its constituents. He has a duty, both as a physician and as a citizen, to appear as a witness whenever called upon to do so. Our courts are set up to administer justice and no matter how bizarre or strange, or possibly even unfair the procedures may seem, his regard for this form of justice must always be high.

When the physician takes such an attitude, he, in turn, will get respect and should expect and demand this respect.

When, for example, he is being qualified as a witness, he should be proud that he is a physician and he should remember, as I have previously stated, there could be no case without him. Just the fact that he is a doctor makes him outstandingly important in the courtroom. It is not necessary that he be a Phi Beta Kappa or that he had studied in Europe, or that he had spent 16 years in a specialty. He does not have to be a professor or wear a goatee, or be the President of his medical society — but, he must be a good, honest and respectable physician. True, these other things are extra, but as a medical witness, he should begin with the premise that no matter how little or far reaching is his training, the mere fact that he is a physician, who has respect for the court, respect for his profession, and above all, respect for himself, makes him an outstanding, important, and worthy witness.

At this point, some positive remarks are in order as to the physician's conduct as a medical witness.

First, he should come well prepared — complete and full knowledge of the medical aspects of the case is essential. It is not necessary for him to commit them to memory, but reports, x-rays, office notes, and fee data should be as close to him as is his inside vest pocket. The best trained physician makes the poorest witness when he flounders on the stand, desperately groping for information to answer questions directly related to his own examination of the claimant.

Second, doctors' mannerisms and appearances are important. The physician should be pleasant in the presentation of testimony. The jury should be addressed as much as possible, rather than the people in the courtroom. Relaxation on the witness stand helps him think better and all information should be given with assurance, but not in a "cocky" manner. Courtesy to the opposing lawyer during cross-examination is requisite and it is imperative that the doctor never lose his temper.

Keep in mind that the members of the jury are not doctors, so you must use lay terms or interpret your medical terms in order that they understand what you are talking about. Of great importance is that you speak loudly and clearly at all times so that the jury may hear your words. Be interested in what you are saying — never appear bored with proceedings. Always dress well, because as a witness you are closely observed, so be particularly cognizant of the impression your manner of dress might make on the jury.

The third and probably the most important phase of your behavior on the stand is the way you respond to questions and particularly those of the cross-examining attorney. Every question must be understood before answering and the answer should not be given until the question is completed. Leading questions, requiring only an answer of yes or no should be watched. The witness must be cautious not to become overconfident, and only the questions asked should be answered. Do not hesitate to change an answer made during an examination if you feel it was incorrect and never under-estimate the medical

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knowledge of the interrogating attorney during cross-examination.

All answers to questions calling for opinion should be kept within the realm of reasonable medical certainty. Above all else, remember to be impartial. Adhere to honest interpretations and remember that your impression is your privilege.

Invariably you will be asked about your fee or fees for services. If there is anything that you may be criticized for, this certainly will be one of them. Don't destroy your good testimony by making your medical charges ridiculous.

Doctors, keep in mind that you are to furnish information only — you are not the attorney nor are you responsible for the actions of the judge and jury — you are responsible only for your own conclusions. "The truth will set you free."

Industry's Role in Community Health

PREVENTIVE medicine is not new, by any means. It has been, and continues to be, the backbone of industrial medicine and hygiene. Under the somewhat newer term of constructive medicine, it offers a broad medical-psychological program as a solution of the problem of how to keep the employee happy and working.

In this work, as in other duties, the doctor in industry happens to be in a unique position in dealing with people. He should know his medicine and be a good listener when an employee comes to him with a problem. He has to be an intermediate between worker and management. In this sense, the doctor in industry corresponds to the prototype of the old-time country doctor. For, like the physician of the horse-and-buggy era, he is concerned with the "whole health" of the individual — mental, physical, and social.

This whole health concept becomes nearer a reality when an alert management will encourage its industrial physicians and staff to establish close relations with their natural allies. Among them are health officers, practicing physicians and nurses, medical societies, voluntary health agencies, medical schools, hospitals, and other agencies interested in community health.

Working together, these groups can discover and solve health problems which, if unsolved, would erode away at the foundations of the best in-plant health programs. Unknown gaps in community health protection — affecting the health of employees and their families — can by joint inquiry be exposed and eliminated.

Since the private practitioner is the cornerstone of community health, he deserves and should get the wholehearted support of industry. Every employee should be encouraged to have a family doctor. There should be free interchange of information and records between a medical division and the family doctor — and a friendly, first-name relationship between the private physician and his industrial counterpart. After all, they have much in common, especially the objective of improving health standards. Through this common objective they should be able to work out relationships which will benefit the community, industry, and the medical profession.

Industry has another role to play in employee and community health — that of health education. The educational approach helps employees understand the importance of good health and stimulates in them a desire to improve their own health practices.

Industrial medicine has come a long way. Its stature is quite remarkable when you consider that 60 years ago, only a few believed that poor health and absenteeism could be forestalled by giving people medical care on the job. And the pace of progress in this important work seems to quicken with each passing year. Today, industry is spending at least three times as much on its employees' health as it did in 1940.

Granted, then, industrial medicine has come a long way since the days of the cigar-box first aid station. But where is it headed? And how may its work be expected to bring about still greater benefits to communities in which industry operates?

First of all, I believe we are moving toward more teamwork between industrial medicine and corporation management. Industry gravely needs the help and guidance that a medical staff is uniquely qualified to give. That applies to the full use of medical techniques and tools within the plant as well as to company participation in the promotion of community health.

I believe we will more completely overcome the lag between new developments in medicine and their application to industrial health. Successful and well-rounded medical programs for in-plant use must be geared to medical research, to take full and immediate advantage of all new tools and weapons. I believe, too, that we are moving in the direction of better mental health in industry and related matters which should prove most useful in the areas of employment, job placement, productivity, and retirement. Again, what may be done to help employees in these matters will benefit the communities in which they live.

There is no fence high enough to keep disease and poor health out of business and industry. Concern for employee health must extend beyond the eight hours a day that workers spend on their jobs. To attain and maintain good health for employees, we must broaden our interests. We must look far beyond the plant gate or the office door. And when we do, we will become more firmly convinced that industry can and must play an ever-increasing role in the betterment of community health.

—From an address by H. W. Ferguson, Vice President, Humble Oil & Refining Company, made in September, 1957, at the Tenth Annual Health Conference for Business and Industry, Houston, Texas.

Toxicological Aspects of Common Food and Drugs

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ALMOST 20 years ago additional impetus to the Food and Drug Administration's program resulted from a chemist's misuse of a commercial solvent in manufacturing a drug. The solvent was diethylene glycol and the product was elixir of sulfanilamide. One hundred and five lives were lost and a new Food and Drug law resulted. Ever since, the Food and Drug Administration has kept an unofficial eye on industrial chemicals because eventually many may enter the manufacturing of foods and drugs.

I shall discuss some of the chemicals that enter our everyday foods and explain why reactions to them are minimum. On the other hand, I shall point up the possibility of many types of drug reactions and why the industrial physician must have a working knowledge of the side effects of the many drugs in general use today.

The main point I wish to make about drugs and chemicals relates to the fact that many industrial workers today are exposed to them outside their work. The reactions that may occur following exposure to drugs or chemicals of this variety can simulate many of those which occur in the industrial plant.

Let us return to the question of foods. It is common knowledge that it is almost impossible, in our present economy, to have so-called "pure foods." There are a tremendous number of chemical additives that enter our foods for many reasons. It is likely that most of these chemicals are completely inert as far as producing reactions that should be recognized by the industrial physician. Some chemicals are added for the sole purpose of improving the taste. Many substances are added to increase the acidity of foods in order to preserve them. Chemicals are also added to improve the appearance of foods, aside from the natural and artificial food colorings.

The most commonly used chemicals are those which enter into preparation of flour. Such bleaching agents as oxides of nitrogen, chlorine, chlorine dioxide and benzoyl peroxide, potassium alum, calcium sulfate, sodium aluminum sulfate, etc., enter the miller's armamentarium of chemicals. How many of us realize that magnesium compounds are frequently included in the preparation of canned peas to protect the chlorophyl from destruction during processing? Calcium salts are commonly used to produce firmness in foods. Thus, calcium chloride, sulfate, citrate, and monocalcium phosphate may enter the processing of canned potatoes and canned tomatoes. Various gums, algin, carboxymethyl cellulose, and propylene glycol ester of alginic acid enter into the manufacture of such a common food as cream cheese. There are many emulsifying agents used in the preparation of vegetable and animal foods. Most are limited to fractions of 1% and are generally considered harmless at these levels.

In recent years pesticides have been introduced into agriculture in ever-increasing amounts. It was natural that widespread interest in the possible dangers of consuming foods treated with these chemicals should occur. Pesticides are essentially poisons, and injuries can result when the chemical is ingested in large quantities. The case of acute poisoning is not the problem as related to food. The problem exists in that pesticides, if they enter our foods, are ingested continually and over a lifespan. Severe recognizable reactions are not likely to occur. The question is whether these pesticides interfere with vital functions or with our general health. To counteract this problem our Division of Pharmacology obtains evidence of safety by feeding laboratory animals throughout their entire lifespan, and subjecting these animals to minute investigations to determine whether they were injured in any manner whatsoever. The chief member of the pesticide group is probably DDT. Its danger lies in the fact that when ingested in significant quantities the chemical causes lesions in the liver. In addition, DDT is stored in the body fat in an amount greater than in food. Direct ingestion of foods contaminated with DDT is not the sole problem. Our food-animals may be ingesting the

Presented at a Symposium on Occupational Disease and Toxicology, Queens County Medical Society Building, Forest Hills, New York.

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substance so that there is always the problem of residues in meat or in milk and milk products. Despite the fact that some physicians have blatantly stated that DDT in our food is the cause of many diseases, especially virus-X, there is no evidence at the present time to consider our foods dangerously contaminated.

Other pesticides of extreme importance are those which can produce pharmacological changes without causing visible pathologic changes. The best examples of such chemicals are the organic phosphates. These act as anti-cholinestrase agents and thus produce abnormal physiological influence through an enzyme system. Besides being acute poisons these chemicals can bring about a progressive decrease in the cholinestrase activity of the tissues. Danger exists in the fact that many pesticides are additive in their toxic reation, and therefore the sum total of all pesticides in our diet assumes tremendous importance. The government's role in protecting the public is to establish tolerances for residues of pesticides in foods, allowing a sufficient margin of safety to keep all toxic substances that may be ingested below potentially injurious levels.

IN RECENT years another problem has arisen because of the fact that many hormones and antibiotics are being used in the treatment and feeding of poultry and livestock. They are used both as disease treatments or preventives and growth stimulants. The Administration is not unaware of the fact that if the edible portions of food contain significant quantities of hormones and antibiotics, there is a possibility of harm. These chemicals are not being allowed use, unless it is proved that the quantity in our foods as consumed is safe.

I have skimmed the surface of the listing of chemicals that may enter into our daily diet merely to show the difficulty of trying to pinpoint any one of these as the cause of a reaction to a food. In most instances the person who develops an unusual reaction to a specific processed food may remember that reaction and come to the conclusion that he cannot tolerate that food. Attempting to determine what in the food has caused the reaction is extremely difficult because of the multitude of possible chemicals that can be involved.

Despite the list of chemicals which probably numbers in the hundreds that enter into our daily diet, the Food and Drug Administration is convinced that there is no imminent danger from food on the market today. The philosophy of the Administration is that if there is any doubt as to the safety of a chemical, it best be removed from our diet. In recent years coumarin, a flavoring agent used commonly in baked goods, was withdrawn from use in foods after it was found that this chemical produced liver damage when fed to animals in large quantities. Various certified dyes are being scrutinized with a view of banning the use of any that may be found potentially injurious. The Administration's views on the safety of the chemicals that enter into our foods are based on the tremendous amount of work done by its Pharmacology Division, which has developed a complex group of procedures for the appraisal of the toxicity of chemicals in foods. Acute toxicity studies, biochemical studies involving absorption, storage and metabolism of chemicals, subacute toxicity, and in the case of food, most important of all, chronic oral toxicity studies are constantly being undertaken. All branches of the pharmacology research team are constantly on the alert as to the possibility of carcinogenicity of the chemical involved. Finally, most animals used in the chronic toxicity studies terminate their existence in the hands of the pathologist who minutely examines the organs looking for any hint that the chemical may have damaged the animal.

Thus we feel that the food the industrial worker is ingesting today in this country is essentially safe for the majority, although the worker's selection of his food is not always above reproach.

NOTICE

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Differential Diagnosis of Chest Pain

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THE FIRST and most important step in the evaluation of any patient with the common complaint of chest pain is a detailed and meticulous history followed by a careful physical examination. Often the data obtained through these means will lead directly to the correct diagnosis or directly indicate what further laboratory investigation is necessary. A good history will describe accurately the type of pain, its distribution, its radiation, its duration and the circumstances under which the pain first appeared. It is important to determine what factors may reproduce the pain or what consistently will relieve the pain. It must be remembered that tolerance to pain varies greatly from patient to patient and that the severity of the pain does not necessarily indicate the gravity of the underlying cause.

Other associated phenomena such as pallor, sweating, dyspnea, cough, lowered blood pressure, friction rub, hemoptysis, bone or muscle tenderness, may help make the diagnosis clear. Repeated physical inspection of the patient and repeated laboratory studies may be necessary at times to establish an accurate diagnosis. The necessity for speedy and accurate diagnosis of chest pain is obvious. While in over 90% of cases chest pain is due to coronary artery disease, spinal root compression or a psychogenic disturbance, there are many other sources and all of these must be considered if errors are to be avoided. The more important causes and syndromes are listed in the accompanying table.

The most frequent painful cardiovascular conditions are myocardial infarction, coronary insufficiency and angina pectoris.

Myocardial Infarction

THE PAIN accompanying myocardial infarction may range from a mild, vague substernal discomfort to the severe constricting or crushing pain accompanied by shock. Infarction has been observed in cases where there was no pain, but these are extremely rare. The pain of myocardial infarction mimics the pain of angina pectoris but its duration is much more prolonged, its onset is not necessarily related to effort and there are usually the associated signs of pallor, cold perspiration, rapid, weak pulse, arrhythmia, drop in blood pressure, occasionally a friction rub, nausea and vomiting. Infarction sometimes occurs after surgical procedures where there may have been a prolonged drop in blood pressure. Confirmation of suspected infarction is usually found in the typical electrocardiographic changes. These may not appear in the first few hours but repeated serial tracings usually confirm the diagnosis. Following infarction there may be fever, leukocytosis, pericardial friction rub and further confirmation can be gained from the elevated sedimentation rate and elevated serum transaminase determinations. In our experience, myocardial infarction has been extremely rare in women under the age of 45.

Coronary Insufficiency

THERE is an intermediate group of patients, the group having so-called coronary insufficiency, who may develop severe retrosternal distress similar to that seen in myocardial infarction. However, the electrocardiogram will either be normal or show minor changes indicating myocardial ischemia rather than infarction. There is generally no fever and generally the white cell count is not elevated and the sedimentation rate

ANTERIOR CHEST PAIN

System or Sources	Syndromes
Cardiovascular	Myocardial infarction Coronary insufficiency Angina Pectoris Pericarditis Aortic aneurysm
Pulmonary and Thoracic Viscera	Pulmonary hypertension Pulmonary infarction Pneumonia and pleurisy Spontaneous pneumothorax Mediastinal emphysema Bronchogenic carcinoma Mediastinal tumors
Musculoskeletal and nervous systems	Spinal root compression Herpes zoster Tietze's syndrome Intercostal neuralgia
Gastrointestinal and biliary system	Esophageal carcinoma Cardiospasm Hiatal hernia Pylorospasm Peptic ulcer Gall bladder disease Splenic flexure syndrome
Psychogenic	Neurocirculatory asthenia or effort syndrome

Presented at the 70th Annual Meeting of the American Association of Railway Surgeons, April 17, 1958, at the Drake Hotel, Chicago.

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remains normal. Severe emotional stress, strenuous exertion, or episodes of paroxysmal tachycardia frequently precipitate this type of distress in these patients.

Angina Pectoris

THE DIAGNOSIS of angina pectoris is usually based on the history which the patient gives. In angina the chest discomfort is transient and short lived. It is remarkable the constancy with which a given amount of effort gives rise to pain in any given patient. Angina without relation to effort is rare. The frequent occurrence of angina after a meal or on a cold windy day is well known. Of greatest importance is the history that the pain is relieved by a few minutes of rest or by the prompt use of Nitroglycerin or other coronary vasodilators. The electrocardiogram may or may not be of value in this group of patients. It may be perfectly normal or it may show minor changes which in themselves do not prove the existence of angina. In suspected cases of angina who present a normal resting cardiogram we almost always subject them to the Master two-step exercise tolerance test. A more valuable diagnostic procedure in our experience has been the demonstration of a definite increase in exercise tolerance following the administration of coronary vasodilators to these patients. One must always r e m e m b e r that pain due to coronary disease and pain due to some other etiology may coexist in the same patient.

Pericarditis

IN CONSIDERING pericarditis it is important to remember that the majority of patients do not experience pain. This is due to the fact that much of the pericardium is insensitive to painful stimuli. Occasionally the pain is not due to a pericarditis but is actually due to secondary involvement of the adjacent pleura. The pain of pericarditis may also be substernal in location and may at times be squeezing or crushing in nature. It is usually of long duration and may be made worse by coughing, swallowing, bending forward or deep breathing. It may radiate to the interscapular area or to the neck or shoulder via the phrenic nerve. There may be an associated tachycardia, muffled heart tones, friction rub and low blood pressure. The common causes of pericarditis are well known and their differential diagnosis will not be discussed further. This past year with the prevalence of viral type infections there has been a relative increase in the frequency of so called benign type pericarditis, which is prone to occur in younger individuals f r e q u e n t l y complicating an upper respiratory tract infection. The electrocardiogram may be helpful if the typical changes expected in pericarditis are present. These electrocardiographic changes are transient in nature and the benign course of the disease serves to confirm the diagnosis.

Aortic Aneurysm

DISSECTING aortic aneurysm may at times cause a clinical picture almost identical with acute myocardial infarction. However, the pain in dissecting aneurysm is usually dramatic in its onset, is excruciatingly severe and maximum in intensity at the instant of onset. Pain is usually located in the center of the chest with penetration through to the back and may radiate up into the neck or down the back into the flanks or even the thighs. Hypertension is commonly present in patients with dissecting aneurysm and contrary to the usual picture in infarction the blood pressure usually is maintained at a high level. If the patient survives the initial period, fever and leukocytosis appears. Obliteration of peripheral arterial pulsations may develop in a short time and aid the diagnosis. The electrocardiogram is usually not helpful unless the dissection compromises the coronary artery circulation. Repeated chest x-rays may show progressive increase in the width of the aortic shadow; transient neurological signs may appear and are due to interruption of the vascular supply to the spinal cord or the dissection involves the segmental branches of the aorta.

Syphilitic aortic aneurysm, while becoming rare, must still be considered. In this situation the pain is usually more continuous, tends to be of a dull boring nature and may cause symptoms by compressing or eroding adjacent sensitive structures, such as the sternum, the ribs or the spinal column.

Pulmonary Hypertension

THE PAIN of pulmonary hypertension is worthy of consideration and this pain may mimic angina in almost every respect. While it may be precipitated by exertion or emotion, it may also occur at rest. In addition, the pain accompanying pulmonary hypertension is not dramatically benefited by Nitroglycerin. Often there is a generalized cyanosis. Since the symptom is associated with increased pressure in the pulmonary circuit, a cause for this increase must be found. Such causes include mitral stenosis, atrial septal defects, patent ductus arteriosus, Eisenmenger's complex, disorders of the pulmonary artery and diffuse pulmonary diseases such as asthma, emphysema and bronchiectasis.

Pulmonary Infarction

A MUCH more common cause for acute chest pain is pulmonary infarction. The symptoms and signs reflect the size of the embolus and the area of infarction. If the embolus is massive

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death may occur instantly or within a few minutes. A large embolus may cause pallor or cyanosis, shock, tachycardia and dyspnea associated with great breathlessness and anxiety. The sudden pulmonary hypertension produced results in distention of the jugular veins, accentuation of the pulmonary second heart sound, peripheral cyanosis, profuse sweating and often a marked hypotension. The electrocardiogram may show changes typical of acute right heart strain. Careful physical examination may reveal a thrombophlebitis or the more silent phlebothrombosis in the patient's lower extremities. If the embolus is small and the infarction minimal the pain may be mild or even absent. There may be associated pleural pain or at times an actual pleural effusion. The radiation of pain down one or both arms is exceedingly rare in pulmonary infarction in contradistinction to myocardial infarction.

Pneumonia

PNEUMONIA may be relatively painless. However, there may be a mild aching sensation in the chest and with involvement of the pleura the pain may become severe and characteristically aggravated by deep breathing. Occasionally it may be quite difficult to distinguish between pneumonia and myocardial infarction, as chest pain, cough, dyspnea, fever, cyanosis, tachycardia, leukocytosis and elevated sedimentation rate may be found in both conditions. However, the fever accompanying coronary thrombosis and the elevated sedimentation rate in infarction generally follows by a day or more the actual onset of symptoms. The chest x-ray, of course, usually confirms the diagnosis of penumonia.

Pneumothorax

SPONTANEOUS pneumothorax may begin suddenly with severe chest pain, dyspnea, cyanosis, sweating and a thready pulse. The pain is usually localized to the affected side and at least initially has the quality of pleural pain. If extensive enough, pneumothorax is easily recognized by physical examination alone. Chest fluoroscopy or chest x-ray again will confirm the diagnosis.

Mediastinal Emphysema

INSTEAD of a spontaneous pneumothorax an air leak may occur in an area where free pleural space is not involved. In this situation air may dissect in the interstitial tissues toward the hilum and into the mediastinum producing the syndrome of acute mediastinal emphysema. The onset commonly follows severe coughing, occasionally follows vomiting. Dyspnea, cyanosis, mild fever and leukocytosis may be present. Pneumothorax and subcutaneous emphysema are occasionally found and the characteristic clicking or crunching sound described by Hammond is most striking when present. Chest x-rays, particularly lateral views, may reveal the presence of air in the mediastinal region.

Bronchogenic Carcinoma

BRONCHOGENIC carcinoma sooner or later produces the important symptom of chest pain. While usually of a dull, boring character, produced by pressure on adjacent structures, it may become sharp and stabbing due to pleural involvement or aching and neuralgic in nature if the intercostal nerves become involved. Careful physical examination and roentgenography help make the diagnosis.

Mediastinal Tumors

MEDIASTINAL tumors, whether they be metastatic or primary in origin, often produce a dull retrosternal pain or pain in a corresponding region in the thoracic area of the back. This is usually a steady boring pain and is usually worse at night. Radiation to the throat is not uncommon. When the upper mediastinum is involved pain is often felt at the base of the neck or at the upper anterior chest. It may be accompanied by cough, hoarseness, dyspnea, dysphagia, neck and upper chest cyanosis, venous distention and edema. While usually the initial chest x-ray studies reveal the pathology, repeated chest x-rays may be necessary.

Spinal Root Compression

IT IS of great importance to realize that degenerative changes in the spine, particularly in the lower cervical region involving the discs between the 5th and 6th, and 6th and 7th cervical vertebrae through compression of nerve roots may result in pain in the anterior chest, shoulder regions, down the arms and into the back. This pain may be confused with angina or coronary insufficiency. Often this type of pain is aggravated, however, by turning or hyperextending the neck or by use of the upper extremities, as in lifting or reaching. Head traction or hyperextension of the neck frequently relieves the pain. Cervical or upper thoracic spinal cord tumors may cause a constant pain referred to the chest simulating coronary disease but the constancy and duration of the pain rules against angina and the electrocardiograms, of course, are normal.

Frequently coughing and sneezing will accentuate the pain. In the absence of marked disc herniation or degeneration, osteoarthritis of the spine and rheumatoid spondylitis may also cause pain that radiates to the anterior chest wall. Heat and salicylates often give complete relief. The scalenus anticus and hyperabduction syndromes are examples of situations wherein dis-

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tress or actual pain results from compression of nerves and blood vessels by particular positions of the arms and shoulder girdles. Usually there is associated muscular tenderness, particularly when the muscles are palpated in the state of contraction. It has been shown by Frykholm and others that compression of the ventral motor roots produces pain in the distribution of the muscles supplied by these roots and this type of pain differs in character from that due to dorsal sensory root compression. Motor root pain is usually dull, gnawing, aching, continuous and more localized. Sensory root pain is intermittent, sharp, stabbing and frequently radiates down the upper extremities. Respiratory distress characterized by the inability to inspire or expire comfortably is a common manifestation of lower cervical and upper thoracic root compression. Significant tenderness over the spine at the root lesion level is almost an invariable finding when symptoms of root compression are present. In the cervical region the spine should be examined for tenderness over the spinous processes in back and over the transverse processes laterally.

Herpes Zoster

UNILATERAL chest pain of a burning, aching or stabbing quality is characteristic of herpes zoster when the intercostal nerves are involved (commonly the 4th, 5th and 6th). The pain generally precedes the skin eruption by several days but there have been cases reported where the skin lesions were delayed in appearance for as long as six or seven weeks. Post-herpetic neuralgia may be quite severe and protracted, especially in elderly patients. The skin lesions, once they appear, definitely establish the diagnosis.

Tietze's Syndrome

IN TIETZE'S syndrome the pain is usually localized to the 2nd costal cartilage where swelling and tenderness are also found. Trauma and respiratory infections are considered as precipitating causes and at times a definite costal chondritis results.

Intercostal Neuralgia

WHENEVER pressure, irritation or inflammation attacks an intercostal nerve so called intercostal neuralgia may result with pain experienced in the chest. In many cases this is bilateral and the patient complains of girdle pain. The cause may not be always obvious but in our experience has usually been due to degenerative arthritis of the thoracic vertebra or a neuritis secondary to infection or diabetes mellitus. Again it is important to remember that the etiologic agent may be within the spinal canal and in such cases there is usually a well defined sensory level and other neurologic signs may be present. Tabetic patients sometimes experience girdle pains in the chest region. These pains may be associated with skin hypersensitivity.

Esophagus

THE ESOPHAGUS is always worthy of consideration in any discussion of chest pain as diseases of the esophagus cause either difficulty in swallowing or pain. Pain of esophageal origin is described as pressing, aching or burning, is usually substernal in location and may extend up into the neck, jaws, arms or back. The pain accompanying carcinoma is usually not difficult to distinguish because almost invariably it is associated with dysphagia which antedates the pain. Carcinoma of the esophagus accompanied by pain generally means perforation has occurred or that the disease is in its latter stages and extension of the disease has occurred.

Cardiospasm

CARDIOSPASM may give rise to pain or a vague discomfort that is deep seated within the chest or felt behind the lower part of the sternum. It is usually related to swallowing and hyperextending the back after the ingestion of food may relieve the distress to some degree while bending forward of the patient tends to aggravate the distress.

Hiatal Hernia

IN HIATAL hernia there is generally the history of dyspepsia relieved by sitting or standing up, especially after meals, and a recurrence of the distress when the patient lies down. In searching for hiatal hernia with x-ray studies it must be remembered that some of these are sliding hernias which may become reduced when the patient is standing and it is therefore necessary to carry out the examination with the patient in the Trendelenburg position. Increasing the intra-abdominal pressure as with lifting, straining or the Valsalva maneuver may reduplicate the distress caused by hiatal hernia. We have seen cases where the pain associated with hiatal hernia closely mimicked angina and in which the electrocardiogram showed changes suggestive of myocardial ischemia. These electrocardiographic changes disappeared with surgical correction of the hernia.

Pylorospasm

ON OCCASION pylorospasm is associated with lower retrosternal or precordial pain. It is often described as a dull, boring type of pain radiating to the left of the midline or through to the back. It bears a definite relationship to the taking of food and is accompanied by epigastric heaviness and bloating and is frequently relieved by the belching of gas or by vomiting.

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Peptic Ulcer

THE PATIENT with peptic ulcer usually complains of heartburn, will tell of a definite time relation to meals and will only rarely complain of pain over the lower anterior chest. More often the pain will be referred to the interscapular region posteriorly. The presence of associated nausea and belching, the relation of symptoms to meals, the relief with antacids and the x-ray findings will establish the diagnosis. The perforation of a previously asymptomatic peptic ulcer may simulate acute myocardial infarction and at times the differential diagnosis is quite difficult. However, the epigastric tenderness and rigidity, the mild to severe shock and the normal electrocardiogram speak against the diagnosis of coronary thrombosis.

Gall Bladder

GALL BLADDER disease also may be associated with lower anterior chest pain simulating that of coronary occlusion. The differential diagnosis may be more difficult if it is the patient's first such attack. However, a detailed history, repeated careful physical examination and radiologic and electrocardiographic examinations will lead to the correct diagnosis in the vast majority of these patients.

Splenic Flexure Syndrome

OCCASIONALLY one is confronted by a patient who complains of attacks of precordial pain with radiation into the left side of the neck, left shoulder or left arm. He may be under the impression that he has angina and may be under treatment for this situation with suitable medication with little relief. Generally a carefully taken history will elicit the fact that this patient has a great deal of gas, belching, bloating or flatus. He may relate that the passing of gas or a bowel movement relieves his discomfort and that attacks are precipitated by emotional disturbances, meals, constipation or lying down. He is generally noted to be a tense, anxious person, worried about the so-called heart disease. A barium enema study will generally show a high splenic flexure of the colon. Often a plain abdominal film made during an attack will show a large bubble of air in the colon high under the left diaphragm. Distending the splenic colon with barium may reproduce his pain. Since pain is not present at all times in persons having this anatomic peculiarity and since many other patients with a similar bowel pattern never have pain, it follows that there must be associated spasm. Spasm below the splenic flexure causes obstruction to the normal peristaltic motion and spasm above forces bowel content or gas into the trap and causes pain. Strong reassurance is needed in these patients to relieve the anxiety about heart disease. Thereafter a program of bland diet, sedation and antispasmodics will usually eliminate the symptoms.

Effort Syndrome

THE LAST situation to be discussed is one which is commonly seen and most difficult to manage; namely, so-called neurocirculatory asthenia or effort syndrome. Most often it is seen in the psychoneurotic individual who translates his emotional stress into terms of supposed heart disease. The symptoms include fatigability, dyspnea which may occur either with exertion or at rest and often accompanied by sighing respirations, tachycardia, palpitations, giddiness, tremor, sweating and nervousness. Precordial or periapical pain of a dull aching quality with vague localization is generally present to a variable degree. It may last for hours, does not radiate and may be associated with tenderness in the area where the pain is experienced. It is frequently associated with other psychosomatic symptoms such as headache, weakness and fatigue that is more marked in the morning, often disappearing when the patient is active or preoccupied. However, effort syndrome may coexist with obvious organic heart disease and render the correct appraisal of symptoms and management difficult indeed. Careful inquiry into the emotional status at the time of onset of symptoms will often supply clues. In our experience this group suffering with the so-called effort syndrome seems to carry on for years; at times quite well, at times quite incapacitated, almost completely unaffected by treatment and displaying no particular tendency to premature death.

Summary

THE COMPLAINT of chest pain is extremely common. Most important is a careful history and careful physical examination. While in most cases the symptom is due to cardiovascular or spinal root disease, one must keep in mind the other less common conditions which may cause similar chest pain. The etiology may extend from the cervical area to the upper abdominal viscera. Usually a few simple tests and laboratory studies will accurately confirm the diagnosis.

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Georgius Agricola

1494-1555

BY NEAR common consent, Agricola is accepted as the first substantial contributor to occupational health. Foremostly, he stands out as an engineer. Thus, in a measure, he is the prototype of industrial hygienists. In keeping with his period, he likewise was a physician, but as a physician, is not of the stature of Ramazzini of the next century.

Long ignored by his own countrymen, Agricola reached his highest historical estate through the translation of his "De Re Metallica" by Herbert and Lou Hoover, in 1912. Through the graciousness of ex-President Hoover, excerpts of the Hoover introduction here are presented:*

Georgius Agricola was born at Glauchau, in Saxony, on March 24, 1494, and therefore entered the world when it was still upon the threshold of the Renaissance; Gutenberg's first book had been printed but 40 years before; the Humanists had but begun that stimulating criticism which awoke the Reformation; Erasmus, of Rotterdam, who was subsequently to become Agricola's friend and patron, was just completing his student days. The Reformation itself was yet to come but it was not long delayed, for Luther was born the year before Agricola, and through him Agricola's homeland became the cradle of the great movement; nor did Agricola escape being drawn into the conflict.

Italy, already awake with the new classical revival, was still a busy workshop of antiquarian research, translation, study, and publication, and through her the Greek and Latin Classics were only now available for wide distribution. Students from the rest of Europe, among them at a later time Agricola himself, flocked to the Italian Universities, and on their return infected their native cities with the newly-awakened learning. At Agricola's birth Columbus had just returned from his great discovery, and it was only three years later that Vasco Da Gama rounded Cape Good Hope. Thus these two foremost explorers had only initiated that greatest period of geographical expansion in the world's history. A few dates will recall how far this exploration extended during Agricola's lifetime. Balboa first saw the Pacific in 1513; Cortes entered the City of Mexico in 1520; Magellan entered the Pacific in the same year; Pizarro penetrated into Peru in 1528; DeSoto landed in Florida in 1539, and Potosi was discovered in 1546. Omitting the sporadic settlement on the St. Lawrence by Cartier in 1541, the settlement of North America did not begin for a quarter of a century after Agricola's death. Thus the revival of learning, with its train of Humanism, the Reformation, its stimulation of exploration and the re-awakening of the arts and sciences, was still in its infancy with Agricola.

We know practically nothing of Agricola's antecedents or his youth. His real name was Georg Bauer ("peasant"), and it was probably Latinized by his teachers, as was the custom of the time. His own brother, in receipts preserved in the archives of the Zwickau Town Council, calls himself "Bauer," and in them refers to his brother "Agricola." He entered the University of Leipsic at the age of 20, and after about three and one-half years' attendance there gained the degree of Baccalaureus Artium. In 1518 he became Vice-Principal of the Municipal School of Zwickau, where he taught Greek and Latin. In 1520 he became Principal, and among his assistants was Johannes Förster, better known as Luther's collaborator in the translation of the Bible. During this time our author prepared and published a small Latin Grammar. In 1522 he removed to Leipsic to become a lecturer in the University under his friend, Petrus Mosellanus, at whose death in 1524 he went to Italy for the further study of Philosophy, Medicine, and the Natural Sciences. Here he remained for nearly three years, from 1524 to 1526. He visited the

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Universities of Bologna, Venice, and probably Padua, and at these institutions received his first inspiration to work in the sciences, for in a letter from Leonardus Casibrotius to Erasmus we learn that he was engaged upon a revision of Galen. It was about this time that he made the acquaintance of Erasmus, who had settled at Basel as Editor for Froben's press.

In 1526 Agricola returned to Zwickau, and in 1527 he was chosen town physician at Joachimsthal. This little city in Bohemia is located on the eastern slope of the Erzgebirge, in the midst of the then most prolific metal mining district of Central Europe. Thence to Freiberg is but fifty miles, and the same radius from that city would include most of the mining towns so frequently mentioned in De Re Metallica — Schneeberg, Geyer, Annaberg and Altenberg — and not far away were Marienberg, Gottesgab, and Platten. Joachimsthal was a booming mining camp, founded but 11 years before Agricola's arrival, and already having several thousand inhabitants. According to Agricola's own statement, he spent all the time not required for his medical duties in visiting the mines and smelters, in reading up in the Greek and Latin authors all references to mining, and in association with the most learned among the mining folk. Among these was one Lorenz Berman, whom Agricola afterward set up as the "learned miner" in his dialogue Bermannus. This book was first published by Froben at Basel in 1530, and was a sort of catechism on mineralogy, mining terms, and mining lore. The book apparently was submitted first to the great Erasmus, and the publication arranged by him, a warm letter of approval by him appearing at the beginning of the book. In 1533 he published De Mensuris et Ponderibus, through Froben, this being a discussion of Roman and Greek weights and measures. At about this time he began De Re Metallica — not to be published for 25 years.

Agricola did not confine his interest entirely to medicine and mining, for during this period he composed a pamphlet upon the Turks, urging their extermination by the European powers. This work was no doubt inspired by the Turkish siege of Vienna in 1529. It appeared first in German in 1531, and in Latin — in which it was originally written — in 1538, and passed through many subsequent editions.

At this time, too, he became interested in the God's Gift mine at Albertham, which was discovered in 1530. Writing in 1545, he says: "We, as a shareholder, through the goodness of God, have enjoyed the proceeds of this God's Gift since the very time when the mine began first to bestow such riches."

Agricola seems to have resigned his position at Joachimsthal in about 1530, and to have devoted the next two or three years to travel and study among the mines. About 1533 he became city physician of Chemnitz, in Saxony, and here he resided until his death in 1555. There is but little record of his activities during the first eight or nine years of his residence in this city. He must have been engaged upon the study of his subjects and the preparation of his books, for they came on with great rapidity soon after. He was frequently consulted on matters of mining engineering, as, for instance, we learn, from a letter written by a certain Johannes Hordeborch, that Duke Henry of Brunswick applied to him with regard to the method for working mines in the Upper Harz.

In 1543 he married Anna, widow of Matthias Meyner, a petty tithe official; there is some reason to believe from a letter published by Schmid, that Anna was his second wife, and that he was married the first time at Joachimsthal. He seems to have had several children, for he commends his young children to the care of the Town Council during his absence at the War in 1547. In addition to these, we know that a son, Theodor, was born in 1550; a daughter, Anna, in 1552; another daughter, Irene, was buried at Chemnitz in 1555; and in 1580 his widow and three children — Anna, Valerius, and Lucretia — were still living.

In 1544 began the publication of the series of books to which Agricola owes his position. The first volume comprised five works and was finally issued in 1546; it was subsequently considerably revised, and re-issued in 1558. These works were: De Ortu et Causis Subterraneorum, in five "books," the first work on physical geology; De Natura Eorum quae Effluunt ex Terra, in four "books," on subterranean waters and gases; De Natura Fossilium, in 10 "books," the first systematic mineralogy; De Veteribus et Novis Metallis, in two "books," devoted largely to the history of metals and topographical mineralogy; a new edition of Bermannus was included; and finally Rerum Metallicarum Interpretatio, a glossary of Latin and German mineralogical and metallurgical terms. Another work, De Animantibus Subterraneis, usually published with De Re Metallica, is dated 1548 in the preface. It is devoted to animals which live underground, at least part of the time, but is not a very effective basis of either geologic or zoologic classification. Despite many public activities, Agricola apparently completed De Re Metallica in 1550, but did not send it to the press until 1553; nor did it appear until a year after his death in 1555. During this period he found time to prepare a small medical work, De Peste, and certain historical studies.

In 1546, when he was at the age of 52, began Agricola's activity in public life, for in that year he was elected a Burgher of Chemnitz; and in

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the same year Duke Maurice appointed him Burgomaster — an office which he held for four terms. Before one can gain an insight into his political services, and incidentally into the character of the man, it is necessary to understand the politics of the time and his part therein, and to bear in mind always that he was a staunch Catholic under a Protestant Sovereign in a State seething with militant Protestantism.

Agricola was much favoured by the Saxon Electors, Maurice and Augustus. He dedicates most of his works to them, and shows much gratitude for many favours conferred upon him. Duke Maurice presented to him a house and plot in Chemnitz, and in a letter dated June 14, 1543, in connection therewith, says: " . . . that he may enjoy his life-long a freehold house unburdened by all burgher rights and other municipal service, to be used by him and inhabited as a free dwelling, and that he may also, for the necessities of his household and of his wife and servants, brew his own beer free, and that he may likewise purvey for himself and his household foreign beer and also wine for use, and yet he shall not sell any such beer . . . We have taken the said Doctor under our especial protection and care for our life-long, and he shall not be summoned before any Court of Justice, but only before us and our Councillor . . ."

Agricola was made Burgomaster of Chemnitz in 1546. A letter from Fabricius to Meurer, dated May 19, 1546, says that Agricola had been made Burgomaster by the command of the Prince. This would be Maurice, and it is all the more a tribute to the high respect with which Agricola was held, for, as said before, he was a consistent Catholic, and Maurice a Protestant Prince. In this same year the Schmalkalden War broke out, and Agricola was called to personal attendance upon the Duke Maurice in a diplomatic and advisory capacity. In 1546 also he was a member of the Diet of Freiberg, and was summoned to Council in Dresden. The next year he continued, by the Duke's command, Burgomaster at Chemnitz, although he seems to have been away upon Ducal matters most of the time. The Duke addresses the Chemnitz Council in March, 1547: "We hereby make known to you that we are in urgent need of your Burgomaster, Dr. Georgius Agricola, with us. It is, therefore, our will that you should yield him up and forward him that he should with the utmost haste set forth to us here near Freiberg." He was sent on various missions from the Duke to the Emperor Charles, to King Ferdinand of Austria, and to other Princes in matters connected with the war — the fact that he was a Catholic probably entering into his appointment to such missions. Chemnitz was occupied by the troops of first one side, then the other, despite the great efforts of Agricola to have his own town specially defended. In April, 1547, the war came to an end in the Battle of Mühlberg, but Agricola was apparently not relieved of his Burgomastership until the succeeding year, for he wrote his friend Wolfgang Meurer, in April, 1548, that he "was now relieved." His public duties did not end, however, for he attended the Diet of Leipzig in 1547 and in 1549, and was at the Diet at Torgau in 1550. In 1551 he was again installed as Burgomaster; and in 1553, for the fourth time, he became head of the Municipality, and during this year had again to attend the Diets at Leipzig and Dresden, representing his city. He now had a short relief from public duties, for it is not until 1555, shortly before his death, that we find him again attending a Diet at Torgau.

Agricola died on November 21, 1555. A letter from his life-long friend, Fabricius, to Melanchthon, announcing this event, states: "We lost, on November 21st, that distinguished ornament of our Fatherland, Georgius Agricola, a man of eminent intellect, of culture and of judgment . . ."

A brass memorial plate hung in the Cathedral at Zeitz had already disappeared in 1686, nor have the cities of his birth or residence ever shown any appreciation of this man, whose work more deserves their gratitude than does that of the multitude of soldiers whose monuments decorate every village and city square.

Price of Omission

A SURVEY made by the North Carolina Industrial Commission, in one of the state's large textile manufacturing plants, unearthed the fact that over a 24-month period 75% of the accidents happened to workers who had not had breakfast. The largest number of injuries occurred at 10 A.M. All supervisors were asked to encourage employees to eat a good breakfast every working morning.

— From *Employee Relations Bulletin*, January 29, 1958, as quoted in *Notes and Quotes*, April, 1958.

Stress Factors in Industry

—*An Approach at the U.S. Naval Gun Factory*

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THE STRUGGLE for existence manifests itself more clearly in an industrial plant than perhaps in any other field of endeavor. This undoubtedly is due to the modern organizational structure of industry and its reliance on manpower for its vital function. Any factors that contribute to conservation of this manpower are just as important to the progress of industry as new methods of increased production. The dispensary, besides being an integral part of the modern industrial plant, is in a strategic position to study the effects of stress factors on the health and work efficiency of the employees in industry.

Factors that influence efficiency and stress in an industrial plant can be classified at four levels —administrative, job, extracurricular and health program levels.

I. ADMINISTRATIVE LEVEL

A. *Personnel Placement*: Suitability of the employee for the position.

B. *Orientation*

1. Training of new employee for opening to be filled.
2. Training of old employee for new position.
3. Training of any employee in latest methods for performance of his duties.

C. *Fair Employment Practices*

1. Methods in reducing work force.
2. Methods of hiring and firing employees.
3. Job preferences.

II. JOB LEVEL

A. *Supervisory*: Fair distribution of work load.

B. *Safety Program*: Strict enforcement.

C. *Performance*: Maximum productivity maintained with ease.

D. *Efficiency Performance Ratings*: Maintenance of outstanding ratings with maximum of fairness and minimum of red tape.

E. *Awards*: Recognition of superior accomplishment or beneficial suggestions, and encouragement of the participation of every department on a group as well as individual basis.

F. *Training*: Existence of program for self-improvement necessary for promotion.

III. EXTRACURRICULAR ACTIVITY LEVEL

A. Outside job.

B. Home environment.

C. Financial commitments.

D. Lunch and coffee break activities.

E. Habits: Smoking, drinking, gambling or drug addiction.

F. Hobbies: Creative or non-creative.

G. Communal activities.

IV. HEALTH PROGRAM LEVEL

A. *Therapeutic*: Routine first aid to injured and sick.

B. *Preventive*: Coordination of all other levels.

1. Continuous study and constructive evaluation of employer-employee relationship.
2. Active participation in plant training program.
3. Cooperation with administration and supervisors in advisory capacity.
4. Education of all personnel regarding hygiene and nutrition.
5. Hygienic supervision of work environment:
   a. Provision for music in harmony with type of work.
   b. Provision for suitable rest periods or coffee breaks.
6. Periodic physical examination of key personnel at all levels, including a psychosocial evaluation.
7. Pre-employment physical examination including psychologic screening.
8. Periodic examination of all food handlers to include blood serology, examination of skin and mucous membranes, chest x-ray, stool examination for ova and parasites.
9. Supervision of diet kitchens, cafeterias, and snack bars serving plant personnel.
10. Maintenance of special clinics for special problems.

The United States Naval Gun Factory, a government agency employing several thousand Civil Service personnel, has labor management problems that are akin to those in private industry,

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with the probable added stress factors of less financial reward and less incentive stimuli than are present in corresponding positions in private industry.

Working at the Health Program Level the author has observed the following regarding sick call at the dispensary of the U.S. Naval Gun Factory during the two-year period, November, 1955, to November, 1957: (1) By far the largest number of sick call cases occurred on Monday, except when Monday was a holiday, and then the largest sick call rate occurred the first day of work resumption; (2) The most common non-occupational complaints were found to be related to upper respiratory infections, gastrointestinal disturbances, and cardiovascular disease, in that order.

In the U.R.I. group, the presenting symptoms were in the following order: sore throat, cough, blocked nose, headache, coryza, sneezing, earache, hoarseness, excessive lacrimation and tightness in chest.

In the G.I. group, the presenting symptoms were as follows: nausea, diarrhea, vomiting, abdominal pain, in that order. In this group the precipitating cause elicited was usually a dietary indiscretion involving one or more of the following: sausages, lunch meat, pork, hash, alcohol, doughnuts and coffee, or no breakfast.

In the C.V.D. group, the average age of the patient was 45 as contrasted to an average of 35 in the U.R.I. and G.I. upset groups. In a large percentage of the C.V.D. group, the precipitating factor seemed to be related to an U.R.I. of long standing or an acute episode of gastrointestinal disturbance. Thus, chest pain, generalized, with dyspnea and palpitation not uncommonly followed a spasm of coughing, whereas dizziness, constricting chest pain and cold sweats frequently followed dietary abuse, with resulting vomiting, diarrhea or both.

Ordinarily, one might expect that after a weekend of rest and relaxation there would be little or no sick call. The obvious explanation of a contrary situation is that the weekends and holidays are not used by the employees for rest and relaxation, but instead are used to their detriment by the abuse of their Extracurricular Activity Level.

Although few employees volunteered complaints relating to their jobs, almost all, on questioning, readily admitted to problems of adjustment in these categories that contributed to their tensions at work and at home. Conversely there were few employees who were willing to admit that their extracurricular activities interfered with their job efficiency, e.g.: most employees who held outside jobs claim that they are forced to seek extra employment in order to meet living expenses and to provide adequate food and shelter for their families. They blamed not themselves but the "employer" for not paying them a "living wage." If they smoked excessively, took to drink or drugs, gambled or broke the law, it was never their fault, but the fault of circumstances that forced them into their habits or predicaments.

STRESS DIET
High Protein, Low Fat, Low Salt

Eliminate the following irritants and stimulants:
- Tobacco: Cigarettes, cigars, pipe tobacco, or chewing tobacco.
- Alcohol: Wine, beer, liquor.
- Fats: Ice cream, cake, pastry, candy, gravy, butter, fried foods, fatty meats, canned meats, canned fish, canned soups. (Frozen foods are permitted.)
- Salt: Table salt, sodas, sodium benzoate preserved foods.
- Coffee: Sanka coffee permitted; postum preferred.
- Tea.

Do have all the following essential foods (basic seven food groups):
- Proteins (three portions daily): lean meat, chicken, fish (broiled, boiled, baked), cereal, whole wheat (cooked only), cottage cheese (skimmed), egg (not more than six per week).
- Milk, Skimmed: three glasses — mix three level tablespoons powder in eight-ounce water.
- Fruit: three portions daily — citrus preferred.
- Vegetables: three portions daily — carrots, celery, potato, corn, greens.
- Wheat Germ Oil, Soybean Oil or Oleomargarine: three teaspoons.
- Whole Wheat Bread: three slices.
- Sugar, Honey, or Molasses: three teaspoons.
- Water eight glasses.

As a result of these observations and the associated seemingly avoidable loss of manpower it was felt by the Medical Department at the Naval Gun Factory that an attempt should be made to indoctrinate personnel of the Naval Gun Factory in the essential rudiments of good physical and mental health by emphasizing the importance of nutrition and hygiene via the following methods:

1. Establishment of a Stress Clinic where patients are given personal interviews.

2. Development of a basic stress diet, to be given to every patient. The diet incorporates the basic seven food groups, emphasizes the need for proteins, vitamins and minerals, and warns of the dangers of excessive use of animal fats, salt, stimulants, and irritants.

3. Distribution of hand-out-literature relating to particular complaints to be given to patients during sick call.

4. Publication of a regular column, "Hints to Health," in the official plant newspaper, *The U.S. Naval Gun Factory Log.*

5. Inauguration of a series of lectures on the physical and mental side of aging.

The following case histories typify the results obtained in the various occupational categories:

CASE NO. 1: F. W., a 59-year-old white male,

machinist shop planner, with 27 years of government service, had had recurrent attacks of sinusitis, cervical arthritis and tinnitus for several years. The last episode of the above triad had resisted all treatment and had disabled him for two months. He had been advised by his physician that he should retire on a disability basis and move to a warmer climate. Employee was anxious to continue working until such time as he would be eligible for retirement on a longevity basis of 30 years Federal employment.

Therapy: (1) stress diet; (2) nasal irrigations and postural sinus drainage — taught to patient and performed twice daily by him at home, using a 5% dextrose solution in boiled water; (3) neck traction apparatus — demonstrated to patient who continued using this at home at least once daily for a minimum of 30 minutes at a time; (4) Chlor Trimeton Malleate repetabs 8 mgs. q. 12 h. prescribed to facilitate rest and relaxation; (5) reassurance and encouragement by regular consultations at clinic at monthly intervals.

Results: During 12 months' observation at clinic, employee has not lost any time from work due to illness. He has minimal complaints of tinnitus and only occasional discomfort related to arthritis which responds favorably to salicylates. There has been no recurrence of sinusitis and the employee's morale and efficiency have progressively improved.

CASE NO. 2: C. J., a 45-year-old white male, administrative aide, with a total of 23 years of government service but with loss of time from work due to repeated hospitalizations for three episodes of pneumonia and a more recent hospitalization for gastrointestinal disturbances associated with sigmoid diverticulosis. The employee presented himself at the dispensary for treatment of chronic cough, shortness of breath and easy fatiguability. Physical examination disclosed moderate obesity, cardiac decompensation and mild hypothyroidism.

Treatment: (1) stress diet; (2) oral diuretic (Rolicton); (3) cytomel; (4) reassurance and explanation of body physiology responsible for his symptoms; progress followed in clinic at two to three-week intervals.

Results: Complete relief from all symptoms relating to cardiovascular, upper respiratory and gastrointestinal systems. Maintenance of an excellent work record during entire period of observation (nine months). Gradual reduction of weight. Employee is alert, ambitious and optimistic about his future.

CASE NO. 3: G. S., a 38-year-old obese white male, civilian guard, had excessive time lost from work due to recurring colds, marked weakness, and shortness of breath after moderate exertion. Weight: 188; height: 64 inches.

Treament: (1) stress diet; (2) stress clinic follow-up at two-week intervals for six months.

Results: During the six-month observation period patient lost 30 pounds of weight. Employee claimed that he felt much stronger, found his work much easier and could work longer without feeling tired. No loss of time due to colds during period of observation. Employee was not seen again at dispensary for six months until he reported for treatment of his first cold in 12 months. He had discontinued his stress diet and had regained four pounds.

CASE NO. 4: T. T., a 61-year-old white male engineering supervisor, with 22 years of government service, had a history of recurrent severe abdominal discomfort supposedly due to postoperative adhesions following surgery for a ruptured duodenal ulcer 15 years previously; infrequent episodes of cardiac decompensation associated with arteriosclerotic cardiovascular disease. During past year patient had lost considerable time from work because of above symptoms and had been advised by his physician to consider disability retirement. Employee reported to the Stress Clinic seeking help in continuing employment for one more year when he would be eligible for a retirement pension at age 62.

Treatment: (1) stress diet; (2) Chlor Trimeton Malleate and Reserpine; (3) reassurance and consultation at clinic every two weeks.

Results: (1) complete resolution of all distressing symptoms, except for occasional gas eructations, if patient deviated from diet; (2) no loss of time due to any illness during period of observation (seven months); (3) employee happy at work.

CASE NO. 5: D. W., a 43-year-old negro male general helper with 17 years government service, complained of recurrent dizziness, weakness and frequent colds necessitating excessive loss of time from work. Physical examination showed moderate obesity (weight 245 pounds, height 71 inches) and mild hypertension (B.P. 174/100 sitting; 174/74 standing).

Treatment: (1) stress diet; (2) reassurance and encouragement during visits to clinic at two-week intervals.

Results: (1) completely asymptomatic; (2) normotensive; (3) no loss of time from work for any reason; (4) weight loss averaging one pound per week; (5) employee happy in new found state of physical and mental improved health.

Summary

AT THE United States Naval Gun Factory, a government agency employing several thousand civilian personnel, a stress clinic has been in operation for more than two years. In this clinic's activities emphasis centers upon appropriate counseling and upon a basic stress diet with high protein, vitamin, and mineral values.

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X-Ray Case-Finding Programs

IN TUBERCULOSIS CONTROL

A Public Health Service Statement

SINCE the 1940's, mass radiography of the chest has been a fundamental technique in the detection of tuberculosis in this country. In 1956 approximately 70,000 new active cases of tuberculosis were discovered, a substantial portion of the total by this means.

As originally constituted, mass x-ray surveys had communitywide application and were designed to reach from 70 to 80% of the adult population within a limited time. The rationale that motivated this method of attack was that most of the unknown active cases in the population would be discovered and eventually isolated, treated, and rehabilitated, and that presymptomatic disease would be discovered at a stage before irreparable lung damage had been done.

The only limitation or selection imposed upon these communitywide survey enterprises, in actual practice, was a minimum age. Persons younger than 15 years of age were usually excluded because of both the difficulty of obtaining satisfactory films and the low yield of cases among children. The working assumption was that tuberculosis was a problem of the general adult population and called for widescale intensified attack.

In the last 15 years the tuberculosis problem has changed radically. There are areas of the country where active tuberculosis disease is almost nonexistent. And there are many other areas where tuberculosis continues to be a serious public health and medical problem. There are a number of special groups that carry a heavy burden of tuberculosis and constitute a fertile source of future cases. Thus, tuberculosis continues to be a stubborn problem, and x-ray case finding remains a primary factor in its solution. However, the emphasis has shifted as the tuberculosis control challenge has changed.

Perceiving the nature of this change, the Public Health Service has been supporting for some time the selective use of mass x-ray survey facilities and has promoted their application in population groups at high risk of infection and disease, such as, hospital admissions, patients and employees in mental hospitals, inmates of correctional institutions, low economic groups, particularly those in slum areas, migrant laborers, alcoholics, and others. Contacts of open cases and persons with symptoms typical of tuberculosis constitute other groups that should receive prime attention in case-finding activities.

In applying the principle of selectivity, the yield of new cases should be a strongly influencing factor in establishing priorities for survey programs. Nevertheless, it is recognized that, within the identifiable types of population groups suitable for x-ray case finding, there are wide ranges in the number and rate of discoverable cases. Therefore, no nationwide priority can be established on the basis of gross categories of population. Necessarily, priorities should be determined by the epidemiological demands of the particular local situation. For example, the range of rates of newly discovered cases in correctional institutions indicates that this population group may deserve a very high or a very low priority, depending upon the particular local situation.

Selection of areas of case-finding activity should also be determined by the quantity and quality of available followup, diagnostic and treatment facilities, cost, availability of personnel, and by the community's potentiality for making the maximum utilization of survey findings. When x-ray screening is planned for any group, it is essential that facilities for differential diagnosis be provided so that virtually all clinically significant cases of tuberculosis will promptly come under medical care. Where such facilities are limited, x-ray screening programs should be so restricted as to insure adequate diagnosis and medical care of new cases found.

In low-prevalence groups, tuberculin skin testing is useful as a first step in case finding. X-ray activities could thus be restricted to reactors to tuberculin. As a result, the necessity of screening the whole population would be obviated.

In consequence, the Service proposes that every community evaluate on a continuing basis its tuberculosis problem, its specific needs and its resources, so that x-ray surveys may have maximum effect in terms of number of cases found, the reduction of the reservoir of unknown infectious cases, and, through adequate and endur-

Reprinted from Public Health Reports, January, 1958.

ing followup activities, the breaking of chains of infection.

For many years it has been known that there is a risk of excessive radiation exposure involved in the use of x-ray machines. Current findings in this field that emphasize the significance of relatively low-level radiation exposure now serve to focus attention on the need to maintain and operate x-ray equipment in such a way as to eliminate all unnecessary radiation.

To achieve this purpose, the Public Health Service recommends the following procedures: Systematic inspection should be made of all x-ray case-finding equipment, so that radiation exposure to the population may be reduced as much as possible. Photofluorographic x-ray equipment should be inspected prior to the beginning of a survey and at frequent intervals thereafter. Of particular importance in this connection are: (*a*) permanent installation of the proper size cone, so as to limit the field of radiation to the area of the fluoroscopic screen of the photofluorograph; (*b*) the interposition of a filter of at least 2½ millimeters of aluminum in the useful x-ray beam to eliminate the soft radiation; (*c*) radiation levels at locations where technical and other personnel are situated and where incoming and outgoing examinees are stationed, consistent with the standards set forth in the National Bureau of Standards Handbooks 59 and 60.

A committee of experts has had under review for some time the problems associated with radiation exposure. It is their considered judgment that the risks inherent in such exposure, although important, are relatively small compared to the great benefits from chest x-ray case-finding programs when conducted within the principles set forth in this document.

Summary

THE following, then, are the guiding principles that unify the policy of the Public Health Service as it bears upon tuberculosis x-ray case-finding activities:

1. Mass radiography of the chest, operated under competent auspices, is a fundamental technique in the detection of tuberculosis.

2. Mass x-ray case finding should be applied selectively in groups at high risk of tuberculosis infection and disease.

3. All tuberculosis x-ray survey programs should have the prior approval of the applicable State or local health department.

4. Consideration should be given to the tuberculin test as an initial screening device in low prevalence groups.

5. Every community should evaluate on a continuing basis its tuberculosis problem, needs, and resources, so that local x-ray surveys may have efficient use and maximum effect.

6. Adequate safeguards should be utilized to protect all persons from unnecessary radiation.

High Toll

ALTHOUGH American industry has achieved marked success in its efforts to control the health and accident hazards arising out of employment, the toll taken by occupational disease and injury is still large. Moreover, new processes and materials bring new hazards. An example of this is cited in the medical and public health problems posed by atomic energy. These other aspects of the current occupational health and accident experience in the United States were reported: Silicosis continues to be an appreciable problem, although much has been accomplished through dust control measures in the prevention of the disease. Lead poisoning has been brought largely under control although cases still are reported in industry each year. Tradionally this has been a health threat to painters, plumbers, printers, pottery glazers, and decorators. Many more cases of lead poisoning undoubtedly would occur if those employed to blend tetraethyl lead with gasoline and those engaged in the manufacture of storage batteries were not so well safeguarded. Accidents constitute a particularly serious hazard in a number of occupations. As might be expected, the threat of accident is especially serious for those who earn their livelihoods as aerialists, automobile racers, experimental test pilots in aviation, caisson workers under high atmospheric pressure, steeple jacks, and flagpole workers. Also, many of the jobs in the logging industry are fraught with risk of serious injury, coal mining is a relatively hazardous industry, and pilots who spray, dust, or seed crops from planes are subject to a variety of hazards.

—Metropolitan Life Insurance Company Information Service.

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The Atlantic City Conference

Industrial Medical Association — Forty-Third Annual Meeting
April 21-24, 1958

FOR the thirteenth time, the "big five" of industrial medicine and hygiene held their annual meetings concurrently, forming the National Industrial Health Conference of 1958. Approximately 2,800 persons interested in occupational health met in Atlantic City, April 19-25 to hear presentations on health problems of growing significance to industry, workers and the community. A total of 134 papers were presented on behalf of the five groups — Industrial Medical Association, American Industrial Hygiene Association, American Association of Industrial Dentists, American Conference of Governmental Hygienists and the American Association of Industrial Nurses.

Jerome W. Shilling, M.D.

It was the Forty-Third Annual Meeting for the Industrial Medical Association, and several innovations in the program were considered quite successful. The reception for members, wives and guests, held the evening preceding the general IMA sessions, was well attended and the holding of concurrent sections on medicine and surgery was well received by the membership.

One of the highlights of the program was an address of quality — the Sappington Memorial Lecture by C. W. SCHILLING, M.D., Deputy Director, Division of Biology and Medicine, Atomic Energy Commission. The necessity for facing up to radiation hazards that must be tolerated was the theme of the speech which was entitled, "Everybody's Business — The Problem of Fall Out and Radiation." The complete text of this address will appear in an early issue of Industrial Medicine and Surgery.

Fellowship Certificates

AT THE annual business meeting on April 23, Fellowship certificates were presented to 38 members. In his address of welcome, HENRY S. BROWN, M.D., said, in part:

"During the past year those members, desiring to become Fellows have applied to their respective district counselors of the Association submitting with their requests, detailed statements of their period of membership and the work they have accomplished and are accomplishing which aptly identifies them as industrial physicians or surgeons. After careful scrutiny by an anonymous Fellowship Committee of senior Fellows, applications meeting the required standards are accepted and submitted to the Board of Directors for approval.

"It seems fitting that in order to cherish Fellowship in an organization such as this, one should realize the distinction between Fellows and members.

"As a concrete illustration, for a moment think of a huge excavation in any downtown area of a large city. Leaning against the protecting fence or guardrail at any hour of the day may be found a group of citizens. Some are merely curious, some interested in learning just how a huge structure is erected, but all are satisfied that it is to add to the dignity of their city.

"Likening such individuals to Association members, loyal in attendance, anxious to learn and proud of their membership, scan the depths of the excavation and one sees the fellows actively engaged in building the huge structure. They may not be as expert as some who look down upon them, but they are mentally and manually contributing to the erection of the structure under the supervision of experts whose advice they are glad to receive.

"Therefore this Association is happy and proud to grant Fellowship to such as you and eagerly accepts your offer to don working clothes and join with others in carrying on a task which it is hoped will eventually rear a monumental structure symbolizing to all who daily toil that gigantic efforts are continually

C. W. Shilling, M.D., delivering the Sappington Memorial Lecture.

David B. Allman, M.D., President of the American Medical Association delivering the Address of Welcome.

being made to protect life and limb and avert as far as possible both accident and disease.

"By the presentation of Fellowship, this Association recognizes that you are competent industrial medical men of experience and it is not only expected that you will continue to be such, but will faithfully endeavor to increase your ability and efficiency by study and practice as well as attendance at clinics and meetings.

"Gentlemen, on behalf of the entire personnel of the Industrial Medical Association, you are most heartily welcomed into Fellowship."

Those to whom Fellowship Certificates were awarded are: MARIO ARMANDO ACCINNO, M.D., Birmingham, Alabama; HERBERT BLUMENTHAL ALLEN, M.D., Newton, Iowa; FRANCIS MEDEIROS AMARAL, M.D., San Diego; CHARLES IRWIN BARRON, M.D., Burbank, California; DUANE LLEWELLYN BLOCK, M.D., Dearborn, Michigan; RUSSELL FLOYD BRACE, M.D., Aruba, Netherlands, W.I.; CHARLES JORDAN COLQUITT, M.D., Bessemer, Alabama; WILLIAM HENRY COPE, M.D., Euclid, Ohio; JACK DICK, M.D., Louisville, Kentucky; JOHN CARPENTER DUFFY, M.D., New York City; ROBERT RUTHERFORD DUGAN, M.D., Ponca City, Oklahoma; DOUGLAS LEON GAMETTE, M.D., Los Angeles; FRANKLIN DRENNAN GASSAWAY, M.D., Pittsburgh; ROBERT JAMES GOLDSON, M.D., Boston; JOHN RANDOLPH HALL, JR., M.D., Washington, D.C.; HERMAN JACOB HALPERIN, M.D., Baltimore; HERBERT LAWRENCE HERSCHENSOHN, M.D., Santa Monica, California; CHARLES HENRI HINE, M.D., San Francisco; JAMES DANIEL KELLY, M.D., Doraville, Georgia; IVO JOHN LOPIZICH, M.D., Los Angeles; JOHN RILEY MERRIMAN, M.D., Evanston, Illinois; DONALD SIDNEY MILLER, M.D., Chicago; SEWARD ELMORE MILLER, M.D., Ann Arbor, Michigan; ANTHONY AGATHON MIRA, M.D., New York City; LELAND EARLY PAYTON, M.D., Lynch, Kentucky; GEORGE STANLEY PETERS, M.D., Montgomery, Alabama; ROBERT JOSEPH POTTS, M.D., Dallas; PERRY GRISWOLD PRATT, M.D., Joliet, Illinois; PAUL ATLEE QUAINTANCE, M.D., Los Angeles; FREDERICK ROBERTS RADCLIFFE, M.D., North Andover, Massachusetts; THOMAS GERALD RIGNEY, M.D., New York City; LOGAN THOMSON ROBERTSON, M.D., Asheville, North Carolina; JOHN LEON SEALEY, M.D., Seattle; HARRY VINCENT SOMERS, M.D., Chicago; J. LESLIE TAYLOR, M.D., Mobile, Alabama; DONALD LOUIS TWEDELL, M.D., St. Louis; TIMOTHY DAVID WOO, M.D., Pepeekeo, Hawaii.

Annual Banquet

J. W. SHILLING, M.D., retiring President, presided at the IMA Annual Banquet on April 23 at the Chalfonte Hotel. DAVID B. ALLMAN, M.D., President of the American Medical Association, delivered the address of welcome. DR. ALLMAN said, in part:

"The specialization of medicine at times has weakened the efforts of organized medicine because various groups have splintered off from the profession as a whole. This has not occurred in the case of industrial medicine. Although industrial medicine is one of the fastest growing specialties in medicine today, the Industrial Medical Association, and industrial physicians in general, have not split away from medicine as a whole. Instead, you have cooperated and worked with your colleagues in all fields.

"You are making noteworthy contributions to the worker through discovering signs of health impairment and advising consultations with the family physician in instances where indicated. This has played an important role in the early detection and cure of such non-occupational diseases as tuberculosis, cancer, diabetes, emotional disorders and heart and vascular disease. It has led the way in rehabilitating workers and it has championed the cause of the handicapped and older worker.

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"Thus, I believe that occupational health programs can be, and should be, one of the most vital services influencing the health of the American people today and in the future.

"I believe that if industrial medicine is to progress and to render a significant contribution to the medical profession as well as the industrial worker, it then becomes imperative that the status of the industrial physician be raised in the sight of management. Personally, I feel that the value of the industrial physician should have the status of Vice President in industry, and that he be a part of management and be responsible for management's decisions whether they relate to the health of the industrial worker, the health of the community, or the health of the consumer using the industry's products.

"With the emphasis now being given to fringe benefits in the health and welfare field under contractual arrangements between labor and management, the industrial physician should play a vital role in this area. He can take a position of complete neutrality, and he can maintain such a position by protecting the best interest of the worker and the employer.

"The industrial physician also should guide and direct both workers and management in the selection of health insurance programs made available to the employees. In your midst you have a number of industrial physicians who have had broad experiences in this particular field because of their association with health insurance and pre-paid medical and hospital programs.

"These comments on the status of the industrial physician do not necessarily apply to the full-time practitioner only, but are just as applicable to the part-time physician. It is my belief that all medicine must make every effort to raise the status and influence of industrial medicine in the eyes of management, the employee and the general public. Unless, and until, industrial medicine achieves this proper status and influence, the road will be rocky and our progress hindered."

The Awards

THE Merit in Authorship Award was presented by ARTHUR J. VORWALD, M.D., whose remarks upon presentation follow:

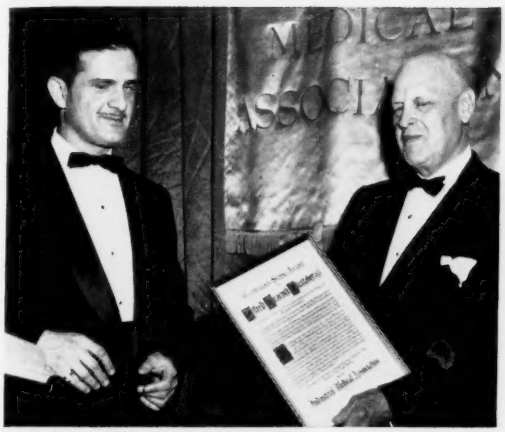
"During the past year your Committee, consisting of DRS. WILLIAM ASHE, JEAN FELTON, DAVID GOLDSTEIN, RUTHERFORD JOHNSTONE, SEWARD MILLER, RALPH SCHNEIDER, and JAMES STERNER, have worked diligently in critically reviewing the world's literature of 1957, to select the publication which possessed those qualities deemed worthy of the Merit in Authorship Award by the Industrial Medical Association. At the close of the year, there were a large number of articles which the Committee members had cited for consideration. During subsequent weeks, only four had survived the rigid standards of the Committee. Ultimately only one of these four was chosen as outstanding from all points of view which included originality, scientific merit, clarity of presentation, and significant contribution to industrial medicine. In retrospect, and perhaps of significance, the selection by the Committee demonstrates the increasing broad scope of industrial medicine, and makes evident that many disciplines of science are involved for the solution of current problems pertaining to occupational health.

H. Richard Blackwell, Ph.D. (left), receiving the Merit in Authorship Award from Arthur J. Vorwald, M.D.

"Mr. President, the Merit in Authorship Award Committee's selection is the paper which appeared in the August, 1957, issue of the *A.M.A. Archives of Industrial Health*. The formal title of that paper is 'Quantitative Relationships of Illumination and Vision.' The informal title is 'Light and Vision,' written by a man who, it has been said, is doing for light what the late Dr. Kinsey did for sex. The author is an Associate Professor of Psychology and Physiological Optics of the Vision Research Laboratories and of the Institute of Industrial Health at the University of Michigan. It is a personal pleasure for me to present the recipient of the award, DR. RICHARD BLACKWELL."

J. H. WOLFSIE, M.D., presented the Meritorious Service Award with the following comments:

"Each year, the Meritorious Service Award Committee selects as the recipient of this award a member or Fellow of this Association (excepting only members of the Executive Committee or Board of Directors during their terms of office) who has made an outstanding contribution to the Association beyond what might normally be expected.



J. H. Wolfsie, M.D. (left), presenting the Meritorious Service Award to Alfred H. Whittaker, M.D.

"As Chairman of the Meritorious Service Award Committee, it is my privilege and pleasure to present this award to DR. ALFRED H. WHITTAKER in grateful recognition of his many services to the Industrial Medical Association.

"DR. WHITTAKER has been a member of the Association since 1929, a Fellow since 1946, and he served as a Director, 1944-46, Second Vice President, 1946-47; First Vice President, 1947-48; President-Elect, 1948-49; and President, 1949-50. He has served on the following Association Committees: History Committee Chairman, 1943-58; National Home Committee, 1949-51; Past Presidents' Committee Chairman, 1950-51; Committee on Trauma Chairman, 1952-54; Joint Committee on Disability Evaluation, 1953-54.

"He conceived and developed the idea of districts and District Counselors for this Association, serving as Counselor of District C in 1947-49. His scientific exhibit on the history of occupational medicine at the 1951 Industrial Health Conference was outstanding. His efforts in accomplishing the long, arduous and painstaking task of compiling the history of the Industrial Medical Association are recognized in particular. He has given freely of his time, counsel, energy, advice and attendance at all Association and Board of Directors meetings far beyond the call of duty, and has always sought new ways and means to enhance the value and importance of this Association.

"On behalf of the membership of this Association, may I express our warm thanks and sincere appreciation. Congratulations."

IN PRESENTING the Health Achievement in Industry Award, O. T. MALLERY, JR., M.D., Chairman of the Committee, said in summary:

"To search and find that which is both new and excellent has been the pleasurable experience of this Association's Committee on Health Achievement in Industry. This award goes to management. For it is on management that achievement of a health program in industry ultimately depends. We, in our professional activities as physicians, nurses, industrial hygienists and the other supporting roles, can be no more effective than the support, guidance, and backing that we have from our managements. The award is another way that this Association can tell other managements throughout the world of how and why industrial health is an asset to industry.

"The selection of the recipient for this year's award was made from nominations by members, Fellows, Officers, and District Counselors of this Association. The number of nominations this year again increased over previous years and is taken as a concrete sign of the accelerating rate with which management is supporting and demanding an outstanding and modern in-plant medical service. The award to be presented tonight could well have been presented to many companies. It is hoped that each of these managements will share equally in the pride of their accomplishments with this year's recipient.

O. T. Mallery, Jr., M.D. (left), presenting the Health Achievement in Industry Award to E. A. Irvin, M.D., and Benson Ford, Ford Motor Company.

"The Health Achievement in Industry Award in 1958 goes to the Ford Motor Company. There has been a medical program at Ford for a long time. But, as the slogan goes, "There's nothing newer under the sun," the Ford management recently re-examined the existing medical program and then proceeded to make many changes. Management found that there was much in the old program that was good, but the goal of management was to achieve an industrial medical program second to none. With this mandate, the new medical program incorporated five major points: (1) selective job placement; (2) treatment and rehabilitation for occupational disorders; (3)

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health maintenance; (4) medical leaves with close cooperation with the private practitioner; and (5) industrial hygiene and environmental health.

"Supporting the new medical services and objectives, 21 new physicians were added to the staff, which totals 75 physicians, 188 registered nurses, nine industrial hygienists, and 125 supporting personnel in first aid and related activities. Some noteworthy and at the same time unusual features of the industrial medical program at Ford include the continuing training course offered to the Ford nurses. Medical students from two universities have been given an opportunity to spend 10 weeks in the Ford Medical Department as part of their extramural medical education. The importance of close professional relations between the medical staff at Ford and the private practitioner is everywhere emphasized.

"Supporting the new and currently effective medical program and personnel have been the construction of new clinical facilities and industrial hygiene laboratories.

"It is with great pleasure that this Association presents the Health Achievement in Industry Award for 1958 to the Ford Motor Company. BENSON FORD, Vice President, Director, and Chairman of the dealer policy board, and DR. E. A. IRVIN, Medical Director of the Ford Motor Company, have been chosen to receive the award for their company. MR. FORD has long been active and interested in health problems. He is presently President of the Board of Trustees of the Henry Ford Hospital in Detroit. To the management of the Ford Motor Company, congratulations on your achievement in developing an outstanding medical program."

BENSON FORD, Vice President of the Ford Motor Company, accepted the award with the following speech:

"It is indeed a great honor to Ford Motor Company to be selected for the Health Achievement in Industry Award. I can think of no other honor that would give us greater pride or a greater feeling of accomplishment, for we in Ford management are intensely interested in helping our employees safeguard their health. When you, who are in the best position to judge, tell us that we have done a good job — that is gratifying indeed.

"Major credit for this achievement must go, of course, to DR. EARLE IRVIN and his excellent staff of physicians, nurses and technicians who run our company's medical program. We are proud of the work they have done, and we are delighted to see them get this recognition.

"At Ford we have long recognized the value of an industrial medical program to the company, to the employee and to the community. During the company's first 50 years our medical services and facilities grew apace with our productive capacity. We provided medical treatment for our employees in plants located all across the country, and we operated the world's largest industrial hospital at the Rouge.

"In 1952 we decided it was time to back off and take a long second look at this program. We wanted to know whether we were doing the best job possible, or whether there was a better way. We wanted to know about our strengths and to overcome our weaknesses. So we called in a panel of experts to survey our setup, and they were told that our goal was 'An industrial medical program second to none in industry for Ford men and women.' This medical advisory committee of four physicians, each a leader in his field, spent a year looking over the medical procedures and facilities in each of our manufacturing and assembly operations. From them we learned some important things about our program.

"Among other things, we were putting more emphasis on curing than on preventing disease and injury; some of our facilities were inadequate and understaffed; and the program needed more centralized leadership.

"We wanted to cure these deficiencies, so we shifted emphasis from cure to prevention of illness and injury; and with intensified effort by our plant safety force we have been able to reduce the frequency of lost-time accidents by 25% since 1952. A number of our plants have won national safety awards for outstanding safety records. We expanded our facilities and augmented our staff of qualified medical and technical personnel. We also began a search for a man who could give us the strong leadership we needed to put into operation the kind of program our medical advisory committee recommended.

"We found DR. IRVIN and, in June, 1954, appointed him Medical Director of Ford Motor Company. He immediately began developing a medical program based on the recommendations of the medical advisory committee.

"We have for some time been convinced that we made the right choice, and now this award confirms the wisdom of our conviction.

"At Ford we believe that the primary responsibility for safeguarding his health lies with the employee himself. But we believe we have a responsibility to give assistance in reducing illnesses and injury. Our program is not intended to replace the family physician, but it is designed to give intelligent, careful and scientific supervision to the health of our employees on the job. And of course, our plant physicians are available for consultation when an employee needs health advice.

"Our medical program has the wholehearted and continuing support of our top management.

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Adolph G. Kammer, M.D. (left), receiving the Knudsen Award from George F. Wilkins, M.D.

It will continue to get that support and, I hope, to merit the kind of accolade you have bestowed today."

THE KNUDSEN Award was presented by GEORGE F. WILKINS, M.D., Chairman of the Knudsen Award Committee. DR. WILKINS' presentation follows:

"This distinguished and senior Award of the Industrial Medical Association now has a historical record of 19 years. It is named for, and perpetuates the memory of General William S. Knudsen, renowned industrialist, and ardent supporter of Industrial Medicine and its aims, and for several years the provider of the Award itself. When the Knudsen Award was established in 1939, the Industrial Medical Association was given the privilege and charged with the responsibility of bestowal upon a physician who had attained distinction in the field of Occupational Medicine and Hygiene, either through one major contribution or through a continuing contribution in the fields of research, administration, teaching, practice, or any combination thereof.

"Just as General Knudsen was representative of the giants of Industry, the previous recipients of this Award constitute a roster of giants of Occupational Medicine and Hygiene. The Knudsen Award since its inception, has been conferred upon 18 individuals, of whom 16 still are living. No Award was made in 1945. This, then is the 19th presentation of this Award.

"Tonight's recipient was born in Darlington, Wisconsin. In 1925 he received the degree of Bachelor of Arts; and in 1926, the degree of Master of Science at the University of Wisconsin. In 1928, he was graduated from the University of Pennsylvania as a Doctor of Medicine and served his internship at the Philadelphia General Hospital. In accordance with the customary career chronology of that time, he also married during this period, subsequently becoming the father of two children. Upon completion of his post graduate training, he engaged in general practice in Southern Wisconsin for the following four years.

"His projection into the field of Occupational Health occurred in 1934 when he interested himself in a silicosis control program in Wisconsin under the Direction of the Field Staff of the Saranac Laboratory. Upon completion of this activity, he became associated with the health program at Inland Steel Company and soon thereafter was appointed its General Medical Director remaining in this post until 1944. In that year he moved to assume responsibility for the health program of the Gasseous Diffusion Plant of Union Carbide Chemicals Company at Oak Ridge, Tennessee, which was operated by the Company at first for the Manhattan Engineer District and later for the Atomic Energy Commission. These responsibilities were expanded to include other Plants until in 1947 he was appointed Union Carbide Chemical Company's Medical Director.

"Having accumulated such a substantial background of experience both in private general practice and in the practice of Occupational Medicine, tonight's recipient then focused his sights upon the field of education. In 1949, when the Graduate School of Public Health was established at the University of Pittsburgh, he was appointed Professor and Head of the Department of Occupational Health, a post which he still occupies. As Head of the Department, he has had responsibility for creation, organization, and supervision of the Department's various programs. His activities include a variety of research projects bearing upon various aspects of Occupational Health, formal courses of post graduate instruction, and the provision of consultation services both to industry and official agencies. The Department's three year program of graduate training in Occupational Medicine was among the first to be approved as preparation for the certifying examination in Occupational Medicine given by the American Board of Preventive Medicine.

"As if these heavy responsibilities were not enough to keep him fully occupied, this busy physician also serves as Medical Consultant both to the Union Carbide Nuclear Company and to Westinghouse Electric Corporation.

"Our recipient was President of the Industrial Medical Association in 1951-52. In addition he has served on numerous committees of the Association and for five years was Chairman of the Association's Committee on Education and Training. In this latter capacity he was extremely active in the efforts leading to formal recognition of Occupational Medicine as a specialty.

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Presidents of the five participating organizations. Standing, left to right: J. W. Shilling, M.D., Industrial Medical Association; Thomas F. Mancuso, M.D., American Conference of Governmental Industrial Hygienists; K. W. Misher, D.D.S., American Association of Industrial Dentists. Seated, left to right: Charles R. Williams, Ph.D., American Industrial Hygiene Association and Gertrude A. Stewart, R.N., American Association of Industrial Nurses.

Currently he is one of three members representing Occupationl Medicine on the American Board of Preventive Medicine.

"It was the unanimous opinion of the Award Committee that tonight's recipient not only fulfills but exceeds those qualifications that are used by the Committee as a guide in making its selection. He has distinguished himself in the field of Occupational Medicine as a teacher, an administrator, a researcher, and a practitioner. In behalf of the Industrial Medical Association, and in behalf of the other members of the Award Committee, I am pleased and privileged to present the 1958 Knudsen Award to DR. ADOLPH G. KAMMER."

DR. KAMMER'S acceptance follows:

"Thank you, DR. WILKINS. A part of the pleasure one gets from a symbol of this kind rests in its demonstration of the regard in which one is held by his colleagues and friends.

"This handsome piece of metal stimulates some speculation about the man for whom the award is named. William S. Knudsen was one of the great men who was at the right place at the right time. His real value to all of us lay in the contribution he was able to make as an industrialist and public administrator when the world was at a crossroads: the entrance of this country into World War II. One could readily be pursuaded that the creation of this award was for him at that time no major event, or that it seemed to have little implication for the future affairs of men.

"But three things happened which produced an enormous enhancement of this seemingly minor act of Mr. Knudsen's. First, industrial medicine as a form of practice grew rapidly with respect both to its intellectual content and breadth of application. Secondly, this Association grew equally in response to the needs of the practitioners of the new specialty. Finally, except perhaps for the present occasion, an impressive list of industrial physicians has been given the award. Their lives and works have given the award its high prestige.

"Of the 18 who have received the Knudsen Award to date, six are here tonight: DRS. SAWYER, LANZA, KEHOE, MCCORD, HOLMBLAD, and STERNER. To have been elected a member of this company is the real honor that has come to me. For this generous act on your part, again, thank you!"

Officers and Directors

THE new officers assumed their new positions at the conclusion of the banquet, when DR. SHILLING turned the presidential gavel over to DR. LAWRENCE.

The officers for 1958-59 are: President — H. W. LAWRENCE, M.D., Procter & Gamble; President-Elect — D. JOHN LAUER, M.D., Jones & Laughlin Steel Company; First Vice President — R. E. ECKARDT, M.D., Esso Research and Engineering Company; Second Vice President — GRADIE R. ROWNTREE, M.D., Fawcett-Dearing Printing Company; Secretary — LEONARD ARLING, M.D., North-

J. W. Shilling, M.D., turns over the gavel to H. W. Lawrence, M.D., new IMA President.

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west Industrial Clinic; Treasurer — JOHN L. NORRIS, M.D., Eastman Kodak Company.

The five new members of the Board of Directors are: DONALD C. BEWS, M.D., The Bell Telephone Company of Canada; ALLAN J. FLEMING, M.D., E. I. du Pont de Nemours & Company; S. CHARLES FRANCO, M.D., Consolidated Edison Company of New York, Inc.; H. GLENN GARDINER, M.D., Inland Steel Company; and EMMETT B. LAMB, M.D., International Harvester Company.

Scientific Exhibit Awards

FROM the 30 excellent scientific exhibits, four were selected to receive awards of merit. They are: first award — "Pain Patterns in Abdominal Diseases: Sites and Behavior of Pain in Certain Common Diseases of the Upper Abdomen" by L. A. SMITH, M.D., N. A. CHRISTENSEN, M.D., N. O. HANSON, M.D., D. E. RALSTON, M.D., R. W. P. ACHOR, M.D., K. G. BERGE, M.D., G. W. MORROW, JR., M.D. and A. H. BULBULIAN, D.D.S., of the Mayo Clinic and Mayo Foundation; second award — "Practical Diagnosis of Surgical Heart Disease" by R. P. GLOVER, M.D., J. C. DAVILA, M.D., and R. G. TROUT, M.D., of the Presbyterian and Episcopal Hospitals and St. Christopher's Hospital for Children, Philadelphia; third award — "Pneumoconiosis in the Diatomite Industry" by H. J. MAGNUSON, M.D., and W. C. COOPER, M.D., of the U. S. Public Health Service; fourth award — "Cytologic Techniques for Office and Clinic: Uterine and Gastric Cancer Control" by H. E. NIEBURGS, M.D., of Mount Sinai Hospital, New York City.

Latin American Dignitaries

A GROUP of outstanding occupational and public health specialists from South America who attended the 1958 Industrial Health Conference in Atlantic City are pictured below.

JOHN J. BLOOMFIELD is the 1958 recipient of the Donald E. Cummings Memorial Award which is made annually by the American Industrial Hygiene Association in recognition of outstanding contribution to the field of industrial hygiene. MR. BLOOMFIELD is Regional Consultant in Industrial Hygiene in Latin America for the Institute of Inter-American Affairs. He was formerly Assistant Chief of the Division of Industrial Hygiene of the U.S. Public Health Service.

DR. RAMON VALLENOS, who is associated with the Institute of Occupational Health in Lima, Peru, addressed the American Conference of Governmental Hygienists on the subject of "The Occupational Health Program in Peru."

DR. ERICH SCHMIDT, Ministry of Health, Caracas, Venezuela, spoke to the American Conference of Governmental Hygienists on "A Venezuelan Approach to Industrial Hygiene."

Standing left to right: Isaias Yanez (Chile), Dr. Hernan Oyanguren (Chile), Dr. Rodrigo Gomez (Colombia), Dr. Victor Matruana (Chile), Eulize Zugasti (Paraguay), Alton Diserens (Venezuela), and Dr. Edgar Paz (Venezuela). Seated left to right: Dr. Roberto Acosta (Colombia), Dr. Ramon Vallenas (Peru), John Bloomfield (Peru), and Dr. Erich Schmidt (Venezuela).

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Industrial Medical Association

President's Page

AS PREVIOUSLY indicated, an energetic membership drive is contemplated for the current year. A special Membership Drive Committee has been appointed with Dr. Logan T. Robertson as Chairman. Clark Bridges, IMA Assistant Managing Director, is an ex-officio member of this Committee, and other members, strategically located from a geographical standpoint, will serve on this central Committee.

In the meantime, until the campaign gets underway, it is important that every IMA member contact at least one or more membership prospect and repeatedly renew these contacts personally or by mail several times throughout the year. This can be started at once, independent of any action of the above Committee.

In your endeavor to interest new members, the question might arise in your mind: Why should I? Why should I urge others to join IMA? Why should I help to recruit new members for the Association? Briefly, the answers to some of these questions may be summarized as follows:

IMA — Is the largest organization in the country representing physicians having an interest in Industrial Medicine — whether full-time or part-time in industry.

IMA — Provides for broad professional relationships across diverse technological lines.

IMA — Sponsors outstanding national meetings with other participating groups where intermingling of members of all branches of Industrial Medicine, Hygiene, Nursing and Dentistry is made possible.

IMA — Offers an opportunity to work actively with many committees which are concerned in doing many things considered essential and beneficial to our professional interests.

IMA — Collaborates at the national level with many professional and lay organizations in order to protect our equities.

IMA — Publishes a journal devoted exclusively to Industrial Medicine, as well as periodic newsletters concerning recent developments in our field.

IMA — Maintains a well-staffed Headquarters office for its members and affiliated components. This Headquarters is a communication center for the many services requested by members — from job placement to the maintenance of a speakers' bureau.

IMA — Maintains a technical reprint file designed to be helpful for specific needs in the preparation of a paper or in the establishment of a department.

IMA — Is an exponent of the free enterprise system. It is not endowed by industry or subsidized by government — it depends entirely upon the support of its membership for the development of its programs and activities.

MANY of our medical colleagues believe that IMA membership is limited to full-time industrial physicians. This, of course, is not true. As a matter of fact, most members practice Industrial Medicine on a part-time basis. Further, a good share of IMA's activity is conducted by part-time physicians. Association activities are delegated to individuals with the ability and willingness to serve — not on the type of practice pursued. The art and the science of Industrial Medicine cannot be limited to full-time men. The vast majority of all industry, benefiting from any kind of an industrial health program, is staffed and is under the direction of part-time physicians of your community. We find in this group general practitioners as well as surgeons, internists, gynecologists, and even obstetricians and urologists. They are in industrial practice for many and varied reasons, and it is our job

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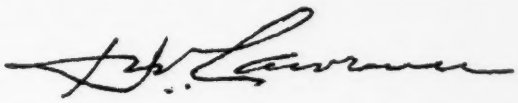
to make certain that they embrace the basic concepts of good industrial medical practice.

These men need our help. They need IMA whether they realize it or not. Their active participation in the affairs of our components or in IMA generally is the obvious solution to many of their problems. IMA stands ready and willing to apply its resources toward professional advancement in this field of practice.

Please phone, write, or personally contact prospective members. If you do not have time to write, send names and addresses to Clark Bridges at IMA Headquarters office, 28 East Jackson Boulevard, Chicago 4, Illinois. Mr. Bridges will do the rest through our Counselors, Component Societies, or through our Membership Drives Committee. The machinery cannot go into action unless you start it in your own locality.



Books

A Difficult Job

THE PRACTICE OF INDUSTRIAL MEDICINE, 2d ed: T. A. LLOYD DAVIES, J. & A. Churchill Ltd., 104 Gloucester Place, W.1., London; Distributed in U.S. and possessions by Little, Brown & Company, Boston, 1957, pp. 282, 15 illustrations, $4.50.

This book possesses a distinct British flavor — which may provide some handicap to wide acceptance in the United States. The author in his preface to this second edition states:

"Doctors and nurses working in industry have a difficult job. Their personal integrity must be unassailable and evidently so to employer and employed; they must have the confidence of all, but avoid becoming participant to disputes; they are called upon to solve difficult medical problems; their interest must range over the whole field of medicine but they must, at the same time, be able to take a broad and charitable view of all various activities which comprise modern civilization.

"Yet in no other field of medicine is a civilized community so much in need of their service. That so few doctors and nurses have been attracted to work in industry may in part be due to lack of opportunity and in part that they have not been acquainted with the unrivalled opportunities for hard, honest work which there await them.

"For these reasons I have attempted, in as few pages as possible, to fill the present serious gap in the education of the medical student and nurse, and to help the practitioner undertaking the work of an industrial medical officer for the first time. I have endeavoured to fit the separate requirements for industrial health into a composite whole, rather than to study each in detail."

Despite the British flavor and the accent on student training, some chapters would have appeal in any land. These include those on fatigue and environment, accident proneness, young persons at work, and preliminary chapters devoted to the history of industrial medicine.

Objective: Safety

LENS MATERIALS IN THE PREVENTION OF EYE INJURIES: ARTHUR HAIL KEENEY, M.D., D.Sc. Charles C. Thomas, Publisher, Springfield, Illinois, 1957, pp. 73, illustrated, $3.50.

This is the readable story of man's effort to serve as his brother's keeper through the provision of suitable lens material in goggles. The title seems dry enough, but strikingly to the contrary this unique book is most readable. Step by step over a period of about a hundred years the development of divers goggle materials is presented, ending up with the presently favored plastic items. Much of the contents center about persons, starting with Herman Cohn who in 1868 realized that if there might be unbreakable lamp chimneys of mica, there might be unbreakable mica safety lenses. That was the start, but beginning about 1912 Walter G. King becomes a hero of the project through his unflagging efforts to produce a highly resistant goggle lens.

Modern safety lens materials are found in laminated glass, thermally toughened glass, and plastics. The author, with the blessing of DR. DONALD J. LYLE, the editor of this series, favors plastic lenses although recognizing some disadvantages. In his summary the author well reveals the objectives of this small, handsomely bound book:

"Recent medical victories over infectious causes of visual loss have accentuated traumatic causes of ocular impairments. Industrial safety programs have largely eliminated eye accidents in major companies. Constant awareness of prevention of blindness can now wipe out most eye injuries in other areas of life and literally replace the inherent hazards of glass lenses with attractive protective shields in all spectacle wearers.

"Both industrial and semiophthalmic thickness types of heat treated (case hardened) glass are easily available at practically no greater cost than conventional glass and are being more widely used for children and individuals in only occasionally hazardous occupations. Present developments in optical plastics have far surpassed the disappointing false starts made with xylonite and methyl methacrylate which were impractically soft and subject to discoloration. The major drawback to plastic lens materials is that they are still softer than glass, but considerable strides have been made in improving this characteristic. Ultimately plastic lenses may afford greater economy by eliminating all surfacing procedures.

"Useful and relatively hard, thermostabile plastic lenses are now available with excellent optical characteristics and extremely high safety values. These

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allyl type resin lenses are of light weight, improved resistance to chemicals, reduced tendency to fogging, and pit less than glass on exposure to welders' splatter.

"All prescriptions for spectacles and goggles should designate the type or treatment of lens material to be used, in an effort to increase mechanical safety and protection. The patient's age, occupation, prescription strength, and economic status should be considered. In lenses of minus cylindrical strength, industrial thicknesses of case hardened glass or allyl resin lenses should be employed, but more suitably thin materials may be ordered for other dioptric ranges.

"According to the indications and contraindications above, these safer lens materials should progressively replace the hazardous and indiscriminate use of crown glass."

Ego-Involvement

MORALE OF WORKERS EXPOSED TO HIGH LEVELS OF OCCUPATIONAL NOISE: JEAN SPENCER FELTON, M.D., and CAROL SPENCER. The University of Oklahoma School of Medicine, 1957, pp. 59. (Single copies free on request.)

Hearsay at an Air Force base was that workers exposed to extremely intense noise demonstrated the highest in morale. This led to a study to establish the facts. The conclusions reached were:

Factors such as noise, exposure to inclement weather, slippery operational areas, and potential explosiveness of work materials *per se* do not determine morale nor affect behavior on the job.

Morale results from the worker's perception of his working conditions and his job, and how the job is perceived is a function of ego-involvement.

Associated with ego-involvement are: a feeling of belongingness, a sense of responsibility, and an opportunity to contribute knowingly to a worthwhile effort.

A program of training can contribute greatly to an awareness of the needs of workers, and the kinds of satisfactions they want from their jobs.

Through this awareness and understanding, workers will be given a feeling of respect, of worthwhileness, of importance, of being wanted.

Through a comparable program, workers can be apprised of personnel policies, and practices, so that a continuing knowledge can allay feelings of insecurity and develop a sense of stability. More important than the knowledge is the feeling that one is a needed part of the organization.

With these goals attained, illness, absenteeism and excessive visitation to the medical department should be self-rectifying, and support of the group's efforts — production — a natural and logical conclusion.

Peat Smoke et al

ATMOSPHERIC POLLUTION: A. R. MEETHAM. Pergamon Press, London and New York, Second Revised Edition, 1956, pp. 302, 63s. net.

The praiseful appraisal here rightfully extended to this book may serve to outrage both the author and the publisher because its outstanding appeal is its nontechnical readability. Presently most professional publications concerned with atmospheric pollution become so precisely technical as to be beyond the grasp of most persons not directly engaged in atmospheric pollution activities. Not so, this book. It is broad in its coverage, starting with the peat bogs of Ireland, but progressing to end up with atomic energy waste. This broadness is reflected in some chapter headings: "Origin of Fuel," "Natural Fuels," "Artificial Fuels," "Industrial Furnaces," "Domestic Fires," "Measurement of Atmospheric Pollution," "Distribution of Pollution," "Effects of Pollution," "Prevention of Atmospheric Pollution," "The Law and Its Administration," "Recent Developments."

This work is meant to be of use to all who are interested in atmospheric pollution — public health officers, smoke and sanitary inspectors, architects, engineers, meteorologists, city councillors, builders, legislators. It is also intended to encourage and help the many citizens who are aware of the degree of atmospheric pollution, and who by their writing, conversation, or example, are helping in the fight against it.

Mention already has been made of readability. That may be exemplified by quoting the portion discussing peat. Most persons in the United States are curious about peat, having none about, and are intrigued by any information. Hence:

"Peat may be regarded as the lowest grade of naturally improved vegetable fuel. It is derived from the mosses and plants which grow in marshes, the lower parts of whose stems tend to die off while the upper parts go on growing. Because of the water with which both the living and dead growth is sodden, the bacterial decay is much more gradual than that going on in cultivated land or compost heaps, and the woody tissue and fats of the dead plants remain unchanged for a very long time. The time required to form peat beds can be estimated; some of them are as much as 30 feet thick, and their thickness is increasing by about a foot every hundred years.

"There are large reserves of peat in Russia, Scandinavia, Germany, the British Isles, Canada, and elsewhere in the same latitudes. It can be dug or cut, during summer, and allowed to dry in the wind. When first cut it contains over 90% water, and after air-drying it still contains 20-30% water. In consequence of this fact and of its bulky nature, hand-cut peat is seldom transported far from the peat bog. A modern way of preparing peat is to pump it from the bog and spread it in thin layers to dry. The powdered product may be compressed into briquettes twice as dense as cut peat and much easier to transport.

"Peat can be distilled to give a kind of coke, as well as tar, ammonia, paraffin, and various oils, but at present its chief use is in domestic fires. Like wood, it makes a noticeable amount of smoke, but this is not usually objectionable. As boiler fuel, both hand-cut peat and briquettes are satisfactory, and have been used at power stations in Northern Europe. Peat has also been used as a locomotive fuel, but in Ireland, where hand-cut peat was employed during the recent war in locomotives designed for coal burning, passengers found their journeys were taking them nearly twice as long."

All of this engaging book is equally appealing.

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INDUSTRIAL MEDICINE AND SURGERY

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ESTABLISHED 1932

Volume 27 JUNE, 1958 *Number 6*

The Incidence of Occupational Affections in a General Hospital Population

A GENERATION and a half ago the late and well-beloved physician, Wade Wright of Boston, made frequent assertions that about 9% of all adult patients in a general hospital presented abnormal states related to employment. In every decade since, that figure frequently has been cited as reliable. Depending upon what is meant by the words "related to employment," it may be constructive to question the validity of the percentile figure presented, as presently applicable.

If "related" is so broad in its implications as to embrace absenteeism from work, then beyond debate most general hospitals include at least 9% of workers. On that basis, the industrial worker-patient undergoing thyroidectomy, for example, or present in the obstetrical division for delivery might be adjudged to harbor conditions "related" to industry but only to the extent that absenteeism is involved.

Should the significance of "related" be limited to "compensation" claimants, promptly the picture changes. In some few urban general hospitals, the facilities provided specialize in services meeting the requirements of industry. Thus, in some few general hospitals the traumatic surgery section may so stand out as readily to provide 9% or more of the total population. Thus, the old figure would remain inviolate. Such hospital circumstances are not the rule.

This state of affairs has been tested over a period of six years in one general hospital, not located in a highly industrial area, in which the total in-patient population averages 700. Of this daily number, some 200 are not adults. Hospital practices require referral to the occupational health consultants all information alleging work connected affections. The occupational health consultants are expected to investigate all such items, not including industrial traumatic cases the number of which is negligible. On the basis of 50 new admissions daily, not including out-patients, it was anticipated that the daily referral rate would average 4.5, with some additions from out-patients. That figure never has been attained. The flow of work for the industrial health consultants approximates one patient daily. However, the conclusions reached in the majority of instances fail to establish any etiologic contributions from work exposures.

The experience of this one hospital center establishes no pattern. It does suggest that the long cherished figure of a 9% incidence of occupational afflictions in general hospital populations no longer is a verity. A closer figure is ninefold lower and even that decrement may err toward the liberal in the estimate.

The Medical Consultant in the Bell Telephone System

THE MEDICAL Consultant should remember he represents no one but medicine. He does not represent the company to the employee or the employee to the company. Even though he represents medicine, he may be required to take a stand. He should know his facts — have his rea-

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sons — stand his ground. He should be an impartial judge for the medical consultant, like all doctors, must always be ethical toward his colleagues. But his status as a consultant has its own problems. A patient may say, "I am dissatisfied with my own doctor. What shall I do?" He should be answered frankly and directed to discuss the situation with his own doctor. It may be wise to remind him that he picked his physician in the first place, and is free to secure the services of another.

Sometimes a patient asks the consultant to accept the case. It is not wise for him to accept, although each case must be decided upon individual merit. To feed one's own practice through company connections . . . or to act unethically . . . often boomerangs. A consultant can not afford to antagonize his colleagues and destroy their cooperation, or be accused of padding his practice by his connection with the company.

It is usually advisable for the medical consultant to contact an employee's private doctor. He can explain that he is acting in liaison between the doctor and his patient and the telephone company. At times he should emphasize that he is not diagnosing or treating, but, that as a fellow physician, he is trying to get a true medical picture of his patient.

The medical consultant should also realize that even if an employee visits him at the employee's request, the state of privileged communication holds. Information obtained should be respected. On the other hand, if a patient is referred by the company, usually all information may be released to responsible parties. There are some cases — illegitimate pregnancies, for example — that are exceptions. These require diplomacy.

A medical consultant has specialized duties. He should remember he is a judge of facts — a missionary of modern medicine — but above all, a doctor. As such he contributes to the health and welfare of his company and its employees.

— KENNETH D. GARDNER, M.D.

Nomenclature

TERMINOLOGY in occupational affections and particularly occupational diseases long has been confusing. Metal fume fever as caused by zinc fumes, for example, has been accorded at least eight different names, no one of which represents admirable medical designation. One step towards betterment now is underway in the activities of Standard Nomenclature of Diseases and Operations under the direction of Edward T. Thompson, M.D., Chief Editor. Serving with Dr. Thompson and the Associate Editor, Mrs. Adaline C. Hayden of the American Medical Association, is a special committee of toxicologists consisting of J. A. Calhoun, M.D., R. E. Gosselin, M.D., Irvin Kerlan, M.D., Edward Press, M.D., and Carey P. McCord, M.D. Dr. Kerlan is chairman of the committee.

Over the land there are some 7000 hospitals, the majority of which achieve their final diagnostic recording in conformity with the Standard Nomenclature of Diseases and Operations. Thus, a hospital in Portland, Maine, by adhering to the codification system of this Standard Nomenclature, would compile its records exactly as would another hospital in Portland, Oregon, or any other city. This practice facilitates case work research and makes reasonable the task of assembling the total experience on any aspect of medicine from anaesthesia to wound infection.

That section within the total provision of this Standard Nomenclature allotted to toxicology never has been well developed. It is the function of the mentioned committee to bring this section on toxicology up to a merit parity with the best of the other sections. The occupational diseases will not be segregated as such although that might be a desideratum. It is apparent that lead poisoning at this time may be arising in the non-working population at a higher frequency than among workers as an occupational disease. Many other diseases well known as occupational affairs by no means are limited to industrial workers. Hence, the necessity for nomenclature coverage that will be all inclusive. Accordingly, all of the terminology assembled by this committee will appear under the section, "Diseases Attributable to the Action of Chemicals." One section of this compilation will be devoted to those chemicals chiefly encountered in occupations. The next edition of this Standard Nomenclature of Diseases and Operations will appear in 1960. At that time and thereafter it may be expected that throughout the land there may be greater uniformity in the coding of occupational disease reports and thereby facilitating statistical research in that portion of occupational health.

NOTICE

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